
NATIONAL

1
00:00:07,200 --> 00:00:24,390
ready to watch

2
00:00:24,400 --> 00:00:30,390
john

3
00:00:34,790 --> 00:00:32,870
for the eyes of the world

4
00:00:36,229 --> 00:00:34,800
now look into space

5
00:00:38,709 --> 00:00:36,239
to the moon

6
00:00:41,110 --> 00:00:38,719
and to the planets beyond we choose to

7
00:00:47,750 --> 00:00:41,120
go to the moon in this decade and do the

8
00:00:47,760 --> 00:00:59,910
that's one small step

9
00:00:59,920 --> 00:01:07,670
hello from the children of planet earth

10
00:01:12,550 --> 00:01:09,750
our progress in space

11
00:01:14,469 --> 00:01:12,560
taking giant steps for all mankind

12
00:01:16,390 --> 00:01:14,479
is a tribute to american teamwork and

13
00:01:17,990 --> 00:01:16,400

excellence

14
00:01:20,070 --> 00:01:18,000
in the ignition and we have liftoff

15
00:01:22,550 --> 00:01:20,080
history's largest astronaut crew is on

16
00:01:25,190 --> 00:01:22,560
its way space plane 3 is airborne and

17
00:01:33,109 --> 00:01:25,200
has cleared the tower liftoff of space

18
00:01:38,310 --> 00:01:35,590
i believe we can send humans to orbit

19
00:01:40,710 --> 00:01:38,320
mars and return them safely to earth

20
00:01:56,310 --> 00:01:40,720
and a landing on mars will follow

21
00:02:01,030 --> 00:01:58,870
that drive to reach higher is alive and

22
00:02:03,030 --> 00:02:01,040
well in today's astronauts who will

23
00:02:04,550 --> 00:02:03,040
travel aboard american-made commercial

24
00:02:07,429 --> 00:02:04,560
vehicles to the international space

25
00:02:09,430 --> 00:02:07,439
station and aboard orion on our very

26
00:02:11,589 --> 00:02:09,440
challenging path to mars

27
00:02:25,910 --> 00:02:11,599
and getting ready to take the next giant

28
00:02:29,750 --> 00:02:27,750
good afternoon everyone i'm dennis

29
00:02:31,350 --> 00:02:29,760
woodfork ii your master of ceremonies

30
00:02:34,550 --> 00:02:31,360
for today's event and i would like to

31
00:02:37,110 --> 00:02:34,560
welcome you to the 2014 agency honor

32
00:02:39,509 --> 00:02:37,120
awards program this annual awards

33
00:02:42,390 --> 00:02:39,519
ceremony is an opportunity for us to

34
00:02:43,589 --> 00:02:42,400
come together to honor nasa's best of

35
00:02:44,869 --> 00:02:43,599
the best

36
00:02:46,710 --> 00:02:44,879
before we begin

37
00:02:48,790 --> 00:02:46,720
please rise for the presentation of the

38
00:02:50,710 --> 00:02:48,800

colors by military district of

39
00:02:51,509 --> 00:02:50,720
washington's joint armed forces color

40
00:02:53,110 --> 00:02:51,519
guard

41
00:02:54,630 --> 00:02:53,120
and remain standing

42
00:02:57,430 --> 00:02:54,640
during the performance of the national

43
00:03:11,030 --> 00:02:57,440
anthem by barry elementary fourth grader

44
00:03:11,040 --> 00:03:27,190
oh

45
00:03:27,200 --> 00:03:34,869
please

46
00:03:36,789 --> 00:03:35,750
oh

47
00:03:37,830 --> 00:03:36,799
say

48
00:03:38,869 --> 00:03:37,840
can

49
00:03:41,030 --> 00:03:38,879
you

50
00:03:43,869 --> 00:03:41,040
see

51
00:03:57,270 --> 00:03:43,879
by the dawn's

52
00:03:57,280 --> 00:04:23,430
whose bright stripes

53
00:04:23,440 --> 00:04:28,310
is

54
00:04:32,310 --> 00:04:29,350
you

55
00:04:36,790 --> 00:04:32,320
through the night

56
00:05:01,270 --> 00:04:36,800
that our flag was still there

57
00:05:01,280 --> 00:05:05,590
oh

58
00:05:05,600 --> 00:05:10,150
please be seated ready

59
00:05:10,160 --> 00:05:29,270
uh

60
00:05:29,280 --> 00:05:32,790
please be seated

61
00:05:36,230 --> 00:05:34,390
i would like to extend our appreciation

62
00:05:38,550 --> 00:05:36,240
to the military district of washington's

63
00:05:40,469 --> 00:05:38,560

joint armed forces color guard and miss

64
00:05:42,070 --> 00:05:40,479
ajaya thomas for her outstanding

65
00:05:48,710 --> 00:05:42,080
performance let's give them both the

66
00:05:52,629 --> 00:05:50,790
at this time i would like to invite our

67
00:06:03,430 --> 00:05:52,639
administrator mr charlie bolden to the

68
00:06:08,870 --> 00:06:06,469
thank you very much dennis and

69
00:06:10,790 --> 00:06:08,880
let me ask you all to just give another

70
00:06:12,469 --> 00:06:10,800
round of applause for ajaya thomas for

71
00:06:18,469 --> 00:06:12,479
the beautiful rendition of the national

72
00:06:22,629 --> 00:06:20,390
ajaya you don't you probably don't know

73
00:06:24,710 --> 00:06:22,639
it but but you know your performance

74
00:06:26,710 --> 00:06:24,720
should remind all of us

75
00:06:28,950 --> 00:06:26,720
that while stem stands for science

76
00:06:32,790 --> 00:06:28,960
technology engineering and math

77
00:06:34,710 --> 00:06:32,800
what you added uh was an a for the arts

78
00:06:36,309 --> 00:06:34,720
and when you add that in it transforms

79
00:06:37,990 --> 00:06:36,319
into steam some of you know i'm a big

80
00:06:39,670 --> 00:06:38,000
steam person

81
00:06:41,909 --> 00:06:39,680
so thank you very much the arts

82
00:06:44,230 --> 00:06:41,919
transforms us as a people

83
00:06:47,029 --> 00:06:44,240
so thank you for the reminder of the

84
00:06:48,790 --> 00:06:47,039
power to remind us of humanity

85
00:06:51,029 --> 00:06:48,800
as we explore our universe and i think

86
00:06:54,309 --> 00:06:51,039
that's really special today because we

87
00:06:55,990 --> 00:06:54,319
choose to honor not programs or things

88
00:06:57,830 --> 00:06:56,000

but the people who have made them all

89
00:07:00,070 --> 00:06:57,840
possible so thank you again

90
00:07:01,990 --> 00:07:00,080
um i have to i cannot

91
00:07:04,390 --> 00:07:02,000
go any farther without reminding some of

92
00:07:06,309 --> 00:07:04,400
you but letting others of you know

93
00:07:08,230 --> 00:07:06,319
when i look at ajaya and i think about

94
00:07:09,430 --> 00:07:08,240
where she's going to be

95
00:07:12,550 --> 00:07:09,440
yeah

96
00:07:14,390 --> 00:07:12,560
maybe 10 15 years from now

97
00:07:17,110 --> 00:07:14,400
the very first time i met our master of

98
00:07:19,189 --> 00:07:17,120
ceremonies he was i think dennis were

99
00:07:20,070 --> 00:07:19,199
you a giant's age or were you like

100
00:07:21,589 --> 00:07:20,080
yeah

101
00:07:23,909 --> 00:07:21,599
we were on an airplane

102
00:07:26,150 --> 00:07:23,919
going from washington d.c back home to

103
00:07:28,309 --> 00:07:26,160
houston texas or something like that and

104
00:07:30,710 --> 00:07:28,319
i met this incredible young man who much

105
00:07:32,390 --> 00:07:30,720
like ajaya had the courage to get up and

106
00:07:34,390 --> 00:07:32,400
you know talk about

107
00:07:37,510 --> 00:07:34,400
himself and his his aspirations and the

108
00:07:39,430 --> 00:07:37,520
like and who knew that that years later

109
00:07:42,309 --> 00:07:39,440
i would be working with him

110
00:07:44,790 --> 00:07:42,319
here at nasa headquarters so so ajaya i

111
00:07:46,710 --> 00:07:44,800
expected you won't be working with me

112
00:07:49,350 --> 00:07:46,720
but you'll be working with some future

113
00:07:51,589 --> 00:07:49,360

nasa administrator when you come back to

114
00:07:53,909 --> 00:07:51,599
narrate to be the master of ceremonies

115
00:07:56,550 --> 00:07:53,919
at this at this exercise

116
00:07:58,070 --> 00:07:56,560
i also want to welcome i think we have

117
00:08:00,070 --> 00:07:58,080
stem student representatives from

118
00:08:03,029 --> 00:08:00,080
mckinley technology and acosta and

119
00:08:05,110 --> 00:08:03,039
anacostia high schools uh here in d.c as

120
00:08:06,550 --> 00:08:05,120
well as central high school in prince

121
00:08:09,029 --> 00:08:06,560
george's county maryland are you all

122
00:08:19,189 --> 00:08:09,039
here if you would just stand don't don't

123
00:08:22,790 --> 00:08:21,350
thank you very much thanks also to our

124
00:08:24,390 --> 00:08:22,800
stem ambassadors here from the

125
00:08:26,869 --> 00:08:24,400
university of missouri hampton

126
00:08:29,510 --> 00:08:26,879
university virginia state university in

127
00:08:31,270 --> 00:08:29,520
george washington are you all here in

128
00:08:33,670 --> 00:08:31,280
the audience are you ah they are they're

129
00:08:40,230 --> 00:08:33,680
back all the way in the back

130
00:08:45,430 --> 00:08:43,269
uh for me this looks like old home week

131
00:08:48,790 --> 00:08:45,440
uh it is so great to see many of you

132
00:08:51,190 --> 00:08:48,800
return uh who have served the nation and

133
00:08:54,070 --> 00:08:51,200
and particularly nasa so well

134
00:08:56,310 --> 00:08:54,080
um you know this is a really small way

135
00:08:57,990 --> 00:08:56,320
to show you the appreciation that we

136
00:09:00,310 --> 00:08:58,000
have for all that you did but we're glad

137
00:09:02,310 --> 00:09:00,320
that you could find time in what i

138
00:09:04,070 --> 00:09:02,320

imagine for you all is very busy time of

139
00:09:05,110 --> 00:09:04,080
your lives to come back and celebrate

140
00:09:06,949 --> 00:09:05,120
with us

141
00:09:08,949 --> 00:09:06,959
we appreciate the enthusiasm and the

142
00:09:11,670 --> 00:09:08,959
energy of all those young people that

143
00:09:14,389 --> 00:09:11,680
we've introduced in helping us

144
00:09:16,389 --> 00:09:14,399
and others to follow in their footsteps

145
00:09:18,389 --> 00:09:16,399
we're going to need all of you to

146
00:09:19,430 --> 00:09:18,399
achieve the great things that nasa has

147
00:09:21,590 --> 00:09:19,440
planned

148
00:09:24,150 --> 00:09:21,600
on its journey to mars as well as reach

149
00:09:26,389 --> 00:09:24,160
the ambitious goals the entire aerospace

150
00:09:28,790 --> 00:09:26,399
field is working on to help us reach

151
00:09:30,550 --> 00:09:28,800
higher in the coming decades

152
00:09:32,310 --> 00:09:30,560
before we get started i also want to

153
00:09:34,870 --> 00:09:32,320
thank several of the hard working people

154
00:09:36,790 --> 00:09:34,880
at our nasa shared services center

155
00:09:37,910 --> 00:09:36,800
who have helped to make this ceremony

156
00:09:40,550 --> 00:09:37,920
possible

157
00:09:42,710 --> 00:09:40,560
first colleen canary who has been

158
00:09:44,949 --> 00:09:42,720
organizing the agency ceremony since

159
00:09:47,990 --> 00:09:44,959
2010 and takes care of the innumerable

160
00:09:49,670 --> 00:09:48,000
details that that requires

161
00:09:52,710 --> 00:09:49,680
she also coordinates the selection

162
00:09:55,350 --> 00:09:52,720
process so all of our celeb celebrants

163
00:09:56,630 --> 00:09:55,360

uh today should be very grateful to her

164
00:09:59,269 --> 00:09:56,640
for that

165
00:10:04,630 --> 00:09:59,279
thank you colin she is here inside thank

166
00:10:08,389 --> 00:10:06,389
thanks for your continued dedication to

167
00:10:10,710 --> 00:10:08,399
making this important ceremony so

168
00:10:11,990 --> 00:10:10,720
meaningful to everyone involved i also

169
00:10:13,750 --> 00:10:12,000
want to thank and some of them may be

170
00:10:15,590 --> 00:10:13,760
outside still but i also want to thank

171
00:10:17,110 --> 00:10:15,600
tiffany mitchell elizabeth edwards and

172
00:10:19,110 --> 00:10:17,120
daryl roos

173
00:10:21,509 --> 00:10:19,120
or rouse i'm sorry

174
00:10:24,150 --> 00:10:21,519
who have done a lot of behind the scenes

175
00:10:26,150 --> 00:10:24,160
work to support this ceremony from the

176
00:10:28,310 --> 00:10:26,160
logistics of just getting things here to

177
00:10:29,910 --> 00:10:28,320
coordinating the entire event their help

178
00:10:30,949 --> 00:10:29,920
has been invaluable and are they out

179
00:10:33,509 --> 00:10:30,959
there

180
00:10:35,430 --> 00:10:33,519
just yell tell them we said thanks

181
00:10:37,509 --> 00:10:35,440
i want to express my appreciation to

182
00:10:39,430 --> 00:10:37,519
today's honor award winners and to the

183
00:10:41,350 --> 00:10:39,440
entire nasa workforce

184
00:10:43,190 --> 00:10:41,360
for your outstanding contribution to

185
00:10:45,030 --> 00:10:43,200
america's space program

186
00:10:46,949 --> 00:10:45,040
this year we learned that for the second

187
00:10:48,710 --> 00:10:46,959
year in a row nasa was named the best

188
00:10:50,310 --> 00:10:48,720

place to work in government

189
00:10:51,990 --> 00:10:50,320
that's a tribute to all the men and

190
00:10:54,550 --> 00:10:52,000
women who work here and to our

191
00:10:56,870 --> 00:10:54,560
contractor partners who work alongside

192
00:10:59,430 --> 00:10:56,880
us every single day as we take america's

193
00:11:02,150 --> 00:10:59,440
next giant leap in space with planned

194
00:11:04,389 --> 00:11:02,160
human missions to an asteroid into mars

195
00:11:06,069 --> 00:11:04,399
at today's ceremony we will present the

196
00:11:08,389 --> 00:11:06,079
highest honors we bestow on our

197
00:11:10,069 --> 00:11:08,399
workforce the distinguished service

198
00:11:11,509 --> 00:11:10,079
medal and the distinguished public

199
00:11:13,590 --> 00:11:11,519
service medal

200
00:11:16,310 --> 00:11:13,600
these recipients today have dedicated a

201
00:11:18,389 --> 00:11:16,320
significant portion of their careers to

202
00:11:20,790 --> 00:11:18,399
making sure our nation reaches the high

203
00:11:21,910 --> 00:11:20,800
goals that nasa is called upon to make

204
00:11:24,230 --> 00:11:21,920
reality

205
00:11:26,550 --> 00:11:24,240
they represent a commitment to the

206
00:11:28,870 --> 00:11:26,560
specific area of expertise that has

207
00:11:31,110 --> 00:11:28,880
advanced our missions and made it

208
00:11:33,590 --> 00:11:31,120
possible to do the impossible

209
00:11:36,069 --> 00:11:33,600
as we celebrate their excellence we

210
00:11:38,230 --> 00:11:36,079
celebrate all of nasa and the grand

211
00:11:40,470 --> 00:11:38,240
challenges our agency meets

212
00:11:41,670 --> 00:11:40,480
which give rise to such passion and

213
00:11:43,269 --> 00:11:41,680

talent

214
00:11:45,750 --> 00:11:43,279
we are all the better for these

215
00:11:48,550 --> 00:11:45,760
distinguished public servants efforts

216
00:11:50,470 --> 00:11:48,560
on behalf of the agency i congratulate

217
00:11:53,030 --> 00:11:50,480
them all and look forward to the to the

218
00:11:54,629 --> 00:11:53,040
continuing results of their innovation

219
00:11:57,269 --> 00:11:54,639
and hard work

220
00:11:59,110 --> 00:11:57,279
before we hand out the awards i want to

221
00:12:00,550 --> 00:11:59,120
introduce our guest speaker

222
00:12:02,629 --> 00:12:00,560
a gentleman who represents the

223
00:12:04,310 --> 00:12:02,639
innovation and forward thinking that we

224
00:12:06,470 --> 00:12:04,320
do at nasa

225
00:12:08,150 --> 00:12:06,480
bill beruki has worked at nasa for more

226
00:12:11,350 --> 00:12:08,160
than 50 years

227
00:12:13,350 --> 00:12:11,360
from 1962 through 1972

228
00:12:15,190 --> 00:12:13,360
he conducted laboratory and theoretical

229
00:12:16,629 --> 00:12:15,200
studies of the radiation environment of

230
00:12:18,150 --> 00:12:16,639
entry vehicles

231
00:12:20,310 --> 00:12:18,160
he developed spectroscopic

232
00:12:22,949 --> 00:12:20,320
instrumentation to determine the plasma

233
00:12:24,949 --> 00:12:22,959
properties of hypervelocity shock waves

234
00:12:27,430 --> 00:12:24,959
and the results were used in the design

235
00:12:28,550 --> 00:12:27,440
of the heat shields for for the apollo

236
00:12:30,629 --> 00:12:28,560
missions

237
00:12:33,030 --> 00:12:30,639
bill has long been interested in planets

238
00:12:35,190 --> 00:12:33,040

and other solar systems he has studied

239
00:12:37,670 --> 00:12:35,200
the effects of lightning in other

240
00:12:39,910 --> 00:12:37,680
planetary atmospheres and has authored

241
00:12:41,990 --> 00:12:39,920
papers about how to observe planets

242
00:12:44,150 --> 00:12:42,000
orbiting other stars

243
00:12:46,470 --> 00:12:44,160
ultimately bill's dream to observe

244
00:12:48,550 --> 00:12:46,480
planets and other solar systems came

245
00:12:51,590 --> 00:12:48,560
about with the launch of the kepler

246
00:12:54,389 --> 00:12:51,600
observatory in 2007. he's smiling down

247
00:12:56,389 --> 00:12:54,399
there because he he's a happy guy

248
00:12:58,230 --> 00:12:56,399
that mission for which he serves as

249
00:12:59,990 --> 00:12:58,240
principal investigator has been a

250
00:13:01,990 --> 00:13:00,000
smashing success

251
00:13:03,670 --> 00:13:02,000
to date out of more than forty two

252
00:13:06,629 --> 00:13:03,680
hundred planet candidates observed by

253
00:13:07,910 --> 00:13:06,639
kepler scientists have confirmed nearly

254
00:13:09,670 --> 00:13:07,920
one thousand

255
00:13:11,829 --> 00:13:09,680
these planets include many different

256
00:13:15,430 --> 00:13:11,839
types including those near the size of

257
00:13:17,750 --> 00:13:15,440
earth in that tantalizing habitable zone

258
00:13:19,110 --> 00:13:17,760
where we orbit where life could be

259
00:13:21,670 --> 00:13:19,120
possible

260
00:13:23,990 --> 00:13:21,680
bill has a fascinating career fueled by

261
00:13:25,430 --> 00:13:24,000
multiple stem degrees in physics and

262
00:13:27,190 --> 00:13:25,440
meteorology

263
00:13:29,990 --> 00:13:27,200

his work points to one of our key

264
00:13:32,629 --> 00:13:30,000
focuses in the future the search for

265
00:13:52,949 --> 00:13:32,639
life elsewhere please help me welcome

266
00:13:58,949 --> 00:13:56,710
it's a privilege to be here with you as

267
00:14:00,550 --> 00:13:58,959
these many people receive their

268
00:14:03,030 --> 00:14:00,560
awards

269
00:14:04,870 --> 00:14:03,040
it's also an opportunity to talk about

270
00:14:10,790 --> 00:14:04,880
the kepler mission

271
00:14:13,430 --> 00:14:10,800
step in our exploration of our galaxy

272
00:14:16,389 --> 00:14:13,440
it's basically to determine the

273
00:14:19,910 --> 00:14:16,399
frequency of earth-sized planets

274
00:14:22,870 --> 00:14:19,920
the habitable zone of stars uh like the

275
00:14:24,150 --> 00:14:22,880
sun throughout our galaxy if we find

276
00:14:25,430 --> 00:14:24,160
many such

277
00:14:28,389 --> 00:14:25,440
there's probably life throughout our

278
00:14:30,790 --> 00:14:28,399
galaxy we find few such we may be the

279
00:14:32,310 --> 00:14:30,800
only extant life

280
00:14:35,350 --> 00:14:32,320
so i will tell you a little bit about

281
00:14:40,389 --> 00:14:38,710
could i have the next slide please

282
00:14:43,030 --> 00:14:40,399
i would like to start out and show

283
00:14:45,590 --> 00:14:43,040
people what the formation of a planetary

284
00:14:48,629 --> 00:14:45,600
system looks like basically we know the

285
00:14:50,550 --> 00:14:48,639
galaxies has giant molecular clouds and

286
00:14:51,990 --> 00:14:50,560
these clouds are dust and gas and

287
00:14:54,310 --> 00:14:52,000
sometimes they get disturbed by a

288
00:14:56,550 --> 00:14:54,320

supernova or something like that and

289
00:14:59,509 --> 00:14:56,560
part of that cloud collapses under

290
00:15:02,710 --> 00:14:59,519
gravity spins up into a flat disk of

291
00:15:05,030 --> 00:15:02,720
dust and gas that dust and gas

292
00:15:07,189 --> 00:15:05,040
produces the planet and the star

293
00:15:21,990 --> 00:15:07,199
the

294
00:15:24,790 --> 00:15:22,000
are in that plane

295
00:15:26,629 --> 00:15:24,800
we also use it to explain why

296
00:15:28,310 --> 00:15:26,639
we have the refractory planets the

297
00:15:30,629 --> 00:15:28,320
planets that are made of rocks

298
00:15:32,790 --> 00:15:30,639
mercury venus earth and mars close to

299
00:15:34,470 --> 00:15:32,800
this to our sun the thought is well they

300
00:15:36,230 --> 00:15:34,480
were forming near our sun and

301
00:15:37,829 --> 00:15:36,240
consequently the only thing that could

302
00:15:40,069 --> 00:15:37,839
condense out with those high

303
00:15:41,749 --> 00:15:40,079
temperatures was rocky materials so

304
00:15:44,629 --> 00:15:41,759
naturally we would find these rocky

305
00:15:46,870 --> 00:15:44,639
planets close to our star further out

306
00:15:48,710 --> 00:15:46,880
where the orbits much larger there's

307
00:15:51,509 --> 00:15:48,720
more material to a crete to build a big

308
00:15:53,269 --> 00:15:51,519
planet that planet gets big quickly

309
00:15:55,670 --> 00:15:53,279
attracts the hydrogen helium from that

310
00:15:57,990 --> 00:15:55,680
dust and gas disk it becomes the giant

311
00:15:59,829 --> 00:15:58,000
planets that's pretty much what we find

312
00:16:01,829 --> 00:15:59,839
with exception we find these giant

313
00:16:03,829 --> 00:16:01,839

planets not where we find jupiter

314
00:16:06,310 --> 00:16:03,839
necessarily but all over

315
00:16:08,230 --> 00:16:06,320
and so what that's telling us in fact is

316
00:16:09,110 --> 00:16:08,240
that if you find them close to the star

317
00:16:15,910 --> 00:16:09,120
or

318
00:16:18,310 --> 00:16:15,920
of the planetary systems so that's a new

319
00:16:19,990 --> 00:16:18,320
aspect that we learned about in our own

320
00:16:22,069 --> 00:16:20,000
planetary that

321
00:16:23,030 --> 00:16:22,079
tells about our own planetary system as

322
00:16:25,990 --> 00:16:23,040
well

323
00:16:32,069 --> 00:16:29,189
as as uh dr boldness has mentioned is

324
00:16:33,910 --> 00:16:32,079
that we have found some 4 200 planetary

325
00:16:36,150 --> 00:16:33,920
candidates

326
00:16:38,629 --> 00:16:36,160
signals that really tell us we we have a

327
00:16:40,550 --> 00:16:38,639
planet but we always want to confirm

328
00:16:42,069 --> 00:16:40,560
them do some ground-based work with

329
00:16:43,590 --> 00:16:42,079
large telescopes

330
00:16:45,990 --> 00:16:43,600
mathematical work with the signals

331
00:16:48,389 --> 00:16:46,000
themselves to be sure that it's not a

332
00:16:50,230 --> 00:16:48,399
small star crossing a large star or

333
00:16:52,389 --> 00:16:50,240
double star something like that and what

334
00:16:54,550 --> 00:16:52,399
we're showing now is a group of planets

335
00:16:55,990 --> 00:16:54,560
from that group of

336
00:16:58,629 --> 00:16:56,000
confirmed planets

337
00:17:01,269 --> 00:16:58,639
and for scale we have uh on the second

338
00:17:02,949 --> 00:17:01,279

row you can see uh jupiter the biggest

339
00:17:04,870 --> 00:17:02,959
planet in our planetary system and then

340
00:17:06,390 --> 00:17:04,880
there's neptune down there and right at

341
00:17:07,909 --> 00:17:06,400
the bottom is earth

342
00:17:10,309 --> 00:17:07,919
the thing to notice is there's a lot of

343
00:17:12,230 --> 00:17:10,319
planets bigger than jupiter

344
00:17:13,590 --> 00:17:12,240
now people knew early on that there

345
00:17:16,230 --> 00:17:13,600
wouldn't be any planets bigger than

346
00:17:18,949 --> 00:17:16,240
jupiter because if you took jupiter and

347
00:17:20,789 --> 00:17:18,959
you added mass to it it would get denser

348
00:17:23,429 --> 00:17:20,799
after all jupiter is the size of a small

349
00:17:25,110 --> 00:17:23,439
star that's not what happens

350
00:17:26,630 --> 00:17:25,120
it does they do inflate a little bit if

351
00:17:28,789 --> 00:17:26,640
they're close to the star but these have

352
00:17:31,029 --> 00:17:28,799
inflated much more than that and so

353
00:17:33,350 --> 00:17:31,039
theoreticians are having a wonderful

354
00:17:35,990 --> 00:17:33,360
time trying to come up with explanations

355
00:17:38,630 --> 00:17:36,000
for such planets some of those planets

356
00:17:41,669 --> 00:17:38,640
have a density less than that of water

357
00:17:45,190 --> 00:17:41,679
have density in fact that of a styrofoam

358
00:17:47,669 --> 00:17:45,200
coffee cup and that's hard to explain

359
00:17:50,470 --> 00:17:47,679
let's go on to the next slide please

360
00:17:52,310 --> 00:17:50,480
and what we have here is a collection of

361
00:17:54,230 --> 00:17:52,320
all these different planetary candidates

362
00:17:57,430 --> 00:17:54,240
and confirmed planets and we have the

363
00:17:59,990 --> 00:17:57,440

bottom axis the orbital period from one

364
00:18:02,230 --> 00:18:00,000
day out to a hundred thousand days the

365
00:18:05,830 --> 00:18:02,240
vertical axis is how big are those

366
00:18:10,549 --> 00:18:05,840
planets and the one bar is at earth

367
00:18:12,310 --> 00:18:10,559
four at at neptune and 11 at jupiter

368
00:18:13,350 --> 00:18:12,320
the contribution from kepler is in

369
00:18:16,390 --> 00:18:13,360
yellow

370
00:18:19,110 --> 00:18:16,400
you can see a huge number of objects

371
00:18:20,789 --> 00:18:19,120
here and you'll notice that most of them

372
00:18:22,950 --> 00:18:20,799
are between the size of neptune and the

373
00:18:25,110 --> 00:18:22,960
size of earth and actually quite a few

374
00:18:28,870 --> 00:18:25,120
less than the size of earth we find

375
00:18:30,870 --> 00:18:28,880
planets earth size mars size venus size

376
00:18:33,190 --> 00:18:30,880
even some down as small as the moon i

377
00:18:35,350 --> 00:18:33,200
think we find even more but those small

378
00:18:37,990 --> 00:18:35,360
planets get lost in the noise we are

379
00:18:40,549 --> 00:18:38,000
still working to dig some of them out

380
00:18:41,909 --> 00:18:40,559
the blue are

381
00:18:43,029 --> 00:18:41,919
planets that have been found with

382
00:18:44,710 --> 00:18:43,039
another technique it says the

383
00:18:46,950 --> 00:18:44,720
photometric technique the radial

384
00:18:48,710 --> 00:18:46,960
velocity technique the photometric

385
00:18:51,110 --> 00:18:48,720
technique looks for planets to cross

386
00:18:54,230 --> 00:18:51,120
their stars and that dimming that occurs

387
00:18:56,470 --> 00:18:54,240
tells about tells us about the size

388
00:18:57,990 --> 00:18:56,480

and the orbital period when it repeats

389
00:19:00,470 --> 00:18:58,000
the radial velocity people are looking

390
00:19:03,190 --> 00:19:00,480
at the motion of the star and they use

391
00:19:04,070 --> 00:19:03,200
that to find in particular long

392
00:19:05,990 --> 00:19:04,080
orbit

393
00:19:08,950 --> 00:19:06,000
planets they've been operating for about

394
00:19:11,110 --> 00:19:08,960
25 years and you can see they find

395
00:19:13,350 --> 00:19:11,120
planets out with orbital periods of many

396
00:19:14,470 --> 00:19:13,360
years and they tend to find the bigger

397
00:19:15,830 --> 00:19:14,480
planets

398
00:19:17,669 --> 00:19:15,840
the red dots there i don't know if you

399
00:19:20,310 --> 00:19:17,679
can notice them or not are another

400
00:19:22,070 --> 00:19:20,320
technique that we use and that is we

401
00:19:24,310 --> 00:19:22,080
look with telescopes at the center of

402
00:19:27,029 --> 00:19:24,320
our galaxy which is just crowded with

403
00:19:27,750 --> 00:19:27,039
stars and that light as it comes toward

404
00:19:31,110 --> 00:19:27,760
us

405
00:19:34,390 --> 00:19:31,120
passes the galactic the the red dwarfs

406
00:19:37,190 --> 00:19:34,400
in our galaxy our galaxies may be half

407
00:19:39,350 --> 00:19:37,200
of these small red dim stars and we

408
00:19:41,590 --> 00:19:39,360
can't see them generally but the light

409
00:19:43,909 --> 00:19:41,600
passes over them and is focused down

410
00:19:45,590 --> 00:19:43,919
into our telescope and so we see when

411
00:19:47,669 --> 00:19:45,600
those things align

412
00:19:49,750 --> 00:19:47,679
the signal from the far away star

413
00:19:52,150 --> 00:19:49,760

brighten up and then dim over a period

414
00:19:53,830 --> 00:19:52,160
of days and weeks and we look for little

415
00:19:55,830 --> 00:19:53,840
glitches those little glitches on that

416
00:19:58,150 --> 00:19:55,840
curve tell us about the planets that

417
00:20:00,950 --> 00:19:58,160
orbit those stars so several different

418
00:20:03,350 --> 00:20:00,960
techniques being used here to find all

419
00:20:04,830 --> 00:20:03,360
these planets

420
00:20:07,750 --> 00:20:04,840
next

421
00:20:10,310 --> 00:20:07,760
figure with science is also about

422
00:20:12,710 --> 00:20:10,320
numbers we need to know the numbers and

423
00:20:15,190 --> 00:20:12,720
numbers allow us to develop the theories

424
00:20:17,190 --> 00:20:15,200
that really represent our reality and

425
00:20:19,750 --> 00:20:17,200
here are numbers

426
00:20:20,870 --> 00:20:19,760
earth-sized planets almost 700 that we

427
00:20:22,870 --> 00:20:20,880
have found

428
00:20:24,310 --> 00:20:22,880
this was as of november we found even

429
00:20:27,190 --> 00:20:24,320
more since then

430
00:20:28,789 --> 00:20:27,200
almost 1100 super earth size up to twice

431
00:20:30,630 --> 00:20:28,799
the size of earth

432
00:20:32,870 --> 00:20:30,640
and those two categories are very very

433
00:20:34,789 --> 00:20:32,880
important they're the planets that are

434
00:20:36,470 --> 00:20:34,799
very likely to be like the earth in a

435
00:20:39,029 --> 00:20:36,480
sense they're rocky plants they have a

436
00:20:40,870 --> 00:20:39,039
surface you might walk upon

437
00:20:42,630 --> 00:20:40,880
as the planets get bigger neptune size

438
00:20:44,710 --> 00:20:42,640

and larger you're talking about plants

439
00:20:47,270 --> 00:20:44,720
with much more massive atmospheres much

440
00:20:49,510 --> 00:20:47,280
higher pressures and systems that may

441
00:20:52,149 --> 00:20:49,520
not have solid surface they may be more

442
00:20:54,630 --> 00:20:52,159
like the gas giants like like jupiter

443
00:20:56,789 --> 00:20:54,640
jupiter is a planet where in fact if you

444
00:20:59,270 --> 00:20:56,799
threw something small in

445
00:21:00,470 --> 00:20:59,280
a brick the earth it would just drop

446
00:21:02,870 --> 00:21:00,480
right on through

447
00:21:05,510 --> 00:21:02,880
except of course jupiter is so hot that

448
00:21:07,590 --> 00:21:05,520
anything dropped into it would evaporate

449
00:21:09,190 --> 00:21:07,600
so it's a very different kind of planet

450
00:21:11,350 --> 00:21:09,200
than we're thinking about when we think

451
00:21:12,789 --> 00:21:11,360
about earth-sized planets notice that

452
00:21:14,390 --> 00:21:12,799
when we get the jupiter-sized planets

453
00:21:16,070 --> 00:21:14,400
there are very few of them and yet

454
00:21:20,149 --> 00:21:16,080
they're the easiest kinds of planets for

455
00:21:24,789 --> 00:21:22,710
and so it really tells us for sure there

456
00:21:26,950 --> 00:21:24,799
are lots of small planets

457
00:21:29,190 --> 00:21:26,960
but we miss a lot of small planets we

458
00:21:30,950 --> 00:21:29,200
know that and we can calculate the

459
00:21:33,430 --> 00:21:30,960
fraction that we miss

460
00:21:34,470 --> 00:21:33,440
we miss planets that have long orbital

461
00:21:35,830 --> 00:21:34,480
periods

462
00:21:37,750 --> 00:21:35,840
like that of the earth we don't see

463
00:21:39,270 --> 00:21:37,760

enough transits have the signal come out

464
00:21:41,430 --> 00:21:39,280
of the noise

465
00:21:43,909 --> 00:21:41,440
we also miss a lot of planets because

466
00:21:46,710 --> 00:21:43,919
for photometry to see a planet you have

467
00:21:49,029 --> 00:21:46,720
to see the planet along its orbit so the

468
00:21:51,190 --> 00:21:49,039
orbit across the sun is in your line of

469
00:21:52,950 --> 00:21:51,200
sight so you see that transit that

470
00:21:55,270 --> 00:21:52,960
blocking of the starlight

471
00:21:57,430 --> 00:21:55,280
and that happens

472
00:21:59,669 --> 00:21:57,440
randomly about in fact you can calculate

473
00:22:01,990 --> 00:21:59,679
how often it happens for a given planet

474
00:22:04,470 --> 00:22:02,000
a certain distance it's diameter of the

475
00:22:06,230 --> 00:22:04,480
star divided by the diameter the orbit

476
00:22:08,789 --> 00:22:06,240
for short period orbits 10 days or

477
00:22:10,710 --> 00:22:08,799
something like that that's 10

478
00:22:12,390 --> 00:22:10,720
you miss 90

479
00:22:14,789 --> 00:22:12,400
other planets

480
00:22:16,630 --> 00:22:14,799
if you're talking about earth out at 1au

481
00:22:18,630 --> 00:22:16,640
you miss over

482
00:22:20,230 --> 00:22:18,640
not you your probability of finding it

483
00:22:22,870 --> 00:22:20,240
is about a percent or maybe half a

484
00:22:24,230 --> 00:22:22,880
percent so you're missing 99 out of

485
00:22:26,710 --> 00:22:24,240
every 100.

486
00:22:28,710 --> 00:22:26,720
but the nice thing is you know how many

487
00:22:30,149 --> 00:22:28,720
you're missing so you can correct for

488
00:22:32,310 --> 00:22:30,159

that bias

489
00:22:35,110 --> 00:22:32,320
and so as we correct for the biases we

490
00:22:37,029 --> 00:22:35,120
can take this measured distribution this

491
00:22:39,110 --> 00:22:37,039
sample distribution and go and look at

492
00:22:40,789 --> 00:22:39,120
the parent distribution that represents

493
00:22:42,390 --> 00:22:40,799
what's really out there can i have the

494
00:22:45,029 --> 00:22:42,400
next figure please

495
00:22:46,950 --> 00:22:45,039
and this is a a chart that one of our

496
00:22:48,870 --> 00:22:46,960
team members chris burke put together

497
00:22:52,310 --> 00:22:48,880
for us to tell us when you correct those

498
00:22:54,630 --> 00:22:52,320
biases what do you find for earth-sized

499
00:22:56,470 --> 00:22:54,640
planets now this is very preliminary it

500
00:22:58,390 --> 00:22:56,480
will certainly change in the coming

501
00:23:00,390 --> 00:22:58,400
months and years as we continue to

502
00:23:02,230 --> 00:23:00,400
analyze all the kepler data but the

503
00:23:04,230 --> 00:23:02,240
first thing it shows you is a huge

504
00:23:06,149 --> 00:23:04,240
number of earth-sized planets out there

505
00:23:08,390 --> 00:23:06,159
than super earth-sized planets and

506
00:23:10,470 --> 00:23:08,400
smaller planets if you look at that left

507
00:23:12,710 --> 00:23:10,480
axis that often accesses say how many

508
00:23:15,750 --> 00:23:12,720
planets per star

509
00:23:17,669 --> 00:23:15,760
point five fifty percent twenty percent

510
00:23:19,830 --> 00:23:17,679
of a planet may be twice the size of

511
00:23:23,350 --> 00:23:19,840
earth so if you sum those together it's

512
00:23:25,110 --> 00:23:23,360
saying most stars have small planets

513
00:23:26,870 --> 00:23:25,120

most stars they're not necessarily the

514
00:23:28,230 --> 00:23:26,880
habitable zone so there are a lot of

515
00:23:29,590 --> 00:23:28,240
earths out there

516
00:23:31,350 --> 00:23:29,600
let's look at some of the planets that

517
00:23:34,390 --> 00:23:31,360
kepler has found because they're really

518
00:23:35,830 --> 00:23:34,400
a very strange and very varied lot and

519
00:23:37,909 --> 00:23:35,840
in particular we're going to look at the

520
00:23:39,029 --> 00:23:37,919
planets that are most easily found those

521
00:23:40,789 --> 00:23:39,039
are the ones that show us lots of

522
00:23:43,110 --> 00:23:40,799
transits but they're very close to their

523
00:23:45,110 --> 00:23:43,120
star and thus very hot next figure

524
00:23:47,510 --> 00:23:45,120
please

525
00:23:48,789 --> 00:23:47,520
here's an object orbiting its star

526
00:23:50,789 --> 00:23:48,799
it's year

527
00:23:52,950 --> 00:23:50,799
a 16 hours

528
00:23:55,350 --> 00:23:52,960
so it's spinning about that star it's

529
00:23:58,029 --> 00:23:55,360
very close to its star and because it's

530
00:24:00,230 --> 00:23:58,039
close it's at a very high temperature

531
00:24:01,029 --> 00:24:00,240
2300 kelvin

532
00:24:04,390 --> 00:24:01,039
now

533
00:24:05,590 --> 00:24:04,400
that's hot that's really hot if you said

534
00:24:07,590 --> 00:24:05,600
you know what's the temperature of

535
00:24:09,750 --> 00:24:07,600
molten lava on the earth

536
00:24:12,390 --> 00:24:09,760
1600 1700

537
00:24:14,870 --> 00:24:12,400
how about mold and iron 1850 this is

538
00:24:17,590 --> 00:24:14,880

hotter than that this object is

539
00:24:19,669 --> 00:24:17,600
evaporating and we don't see the object

540
00:24:21,909 --> 00:24:19,679
we see the trail of all the material

541
00:24:24,310 --> 00:24:21,919
flowing off that object

542
00:24:26,230 --> 00:24:24,320
its lifetime one overview of lifetime is

543
00:24:28,950 --> 00:24:26,240
about 200 million years so it's just

544
00:24:31,590 --> 00:24:28,960
disappearing before our very eyes

545
00:24:35,590 --> 00:24:33,590
this is a planet about one and a half

546
00:24:37,990 --> 00:24:35,600
times the size of the earth again in a

547
00:24:39,510 --> 00:24:38,000
short period orbit very very hot

548
00:24:41,830 --> 00:24:39,520
but this planet

549
00:24:44,149 --> 00:24:41,840
we get its size from photometry the

550
00:24:46,549 --> 00:24:44,159
dimming of the star but we also because

551
00:24:48,390 --> 00:24:46,559
it's massive can measure with the radial

552
00:24:50,070 --> 00:24:48,400
velocity technique the movement of the

553
00:24:51,590 --> 00:24:50,080
star it's mass

554
00:24:54,070 --> 00:24:51,600
if you got the size you've got the mass

555
00:24:57,029 --> 00:24:54,080
you can get get the density the density

556
00:24:59,590 --> 00:24:57,039
of this object is 5.8 grams per cubic

557
00:25:02,390 --> 00:24:59,600
centimeter water is one

558
00:25:04,789 --> 00:25:02,400
earth is 5.5 so this is denser than

559
00:25:07,830 --> 00:25:04,799
earth it probably has a heavier iron

560
00:25:10,310 --> 00:25:07,840
core in a silicate rock cover

561
00:25:12,950 --> 00:25:10,320
but the temperature is some 1800 kelvin

562
00:25:15,669 --> 00:25:12,960
i believe that's the number there

563
00:25:18,310 --> 00:25:15,679

very hot so it's it's hotter than well

564
00:25:22,149 --> 00:25:18,320
it's probably got a molten lava ocean

565
00:25:26,630 --> 00:25:22,159
that faces its star again no life

566
00:25:31,430 --> 00:25:28,549
one of the uh

567
00:25:32,470 --> 00:25:31,440
one of the questions we've had is double

568
00:25:33,990 --> 00:25:32,480
stars

569
00:25:36,310 --> 00:25:34,000
you know when you were a child

570
00:25:38,390 --> 00:25:36,320
you probably wished upon a star

571
00:25:41,029 --> 00:25:38,400
well about 50 of the stars that you wish

572
00:25:42,870 --> 00:25:41,039
upon are actually binary stars a few of

573
00:25:45,110 --> 00:25:42,880
those are trinary stars and so the

574
00:25:47,590 --> 00:25:45,120
question is with all those binary stars

575
00:25:50,470 --> 00:25:47,600
out there do they have planets too

576
00:25:53,110 --> 00:25:50,480
theory said at first no the movement of

577
00:25:54,470 --> 00:25:53,120
the two stars would inject momentum into

578
00:25:56,470 --> 00:25:54,480
that planet and the planet would be

579
00:25:57,990 --> 00:25:56,480
ejected from the planetary system that's

580
00:25:59,909 --> 00:25:58,000
not what theory says today and it's

581
00:26:02,149 --> 00:25:59,919
certainly not what we find here's an

582
00:26:05,350 --> 00:26:02,159
example of a planet that we found

583
00:26:08,070 --> 00:26:05,360
orbiting a double star system

584
00:26:09,110 --> 00:26:08,080
is it luke skywalker's home

585
00:26:12,710 --> 00:26:09,120
well you know if you look at the

586
00:26:14,710 --> 00:26:12,720
temperature minus 125 fahrenheit colder

587
00:26:16,390 --> 00:26:14,720
than the antarctic the answer is this is

588
00:26:18,950 --> 00:26:16,400

not a great place to farm

589
00:26:21,190 --> 00:26:18,960
so no so we have to keep looking

590
00:26:23,190 --> 00:26:21,200
next figure

591
00:26:25,430 --> 00:26:23,200
so here's another double star this

592
00:26:27,750 --> 00:26:25,440
double star has two planets orbiting it

593
00:26:30,310 --> 00:26:27,760
one of which is the habitable zone this

594
00:26:31,830 --> 00:26:30,320
is the large planet there uh

595
00:26:33,430 --> 00:26:31,840
unfortunately although it's inhabitable

596
00:26:36,390 --> 00:26:33,440
zone it's too large it's bigger than

597
00:26:38,470 --> 00:26:36,400
neptune so it's it's not a rocky planet

598
00:26:40,630 --> 00:26:38,480
and so this is not his home

599
00:26:42,149 --> 00:26:40,640
on the other hand planets this big

600
00:26:43,909 --> 00:26:42,159
can have big moons

601
00:26:46,149 --> 00:26:43,919
any moon of a plant and habitable zone

602
00:26:47,350 --> 00:26:46,159
is also an inhabitable cell moons like

603
00:26:49,669 --> 00:26:47,360
titan have

604
00:26:51,990 --> 00:26:49,679
big atmospheres strong thick atmospheres

605
00:26:53,029 --> 00:26:52,000
maybe the moon is as big as the earth

606
00:26:55,269 --> 00:26:53,039
maybe it's

607
00:26:57,190 --> 00:26:55,279
we found pandora but actually we haven't

608
00:26:59,350 --> 00:26:57,200
found any moons we've looked for moons

609
00:27:01,190 --> 00:26:59,360
around these planets we've picked up

610
00:27:02,470 --> 00:27:01,200
signals that we thought were moons but

611
00:27:04,830 --> 00:27:02,480
we haven't been able to prove any of

612
00:27:07,510 --> 00:27:04,840
those we're actually but we continue to

613
00:27:08,870 --> 00:27:07,520

look let's go on and find something

614
00:27:11,430 --> 00:27:08,880
smaller we need something closer to the

615
00:27:15,750 --> 00:27:11,440
size of the earth this is kepler 22 it's

616
00:27:17,909 --> 00:27:15,760
a planet 2.4 times the size of the earth

617
00:27:18,830 --> 00:27:17,919
now that's interesting

618
00:27:24,310 --> 00:27:18,840
it's not

619
00:27:26,870 --> 00:27:24,320
unlike any planet our solar system there

620
00:27:29,750 --> 00:27:26,880
is no analog in our solar system to this

621
00:27:31,909 --> 00:27:29,760
planet is it rocky probably not is it

622
00:27:33,669 --> 00:27:31,919
like neptune probably not

623
00:27:34,389 --> 00:27:33,679
theorists say what we might be finding

624
00:27:36,710 --> 00:27:34,399
here

625
00:27:38,310 --> 00:27:36,720
and we find a lot of these

626
00:27:40,230 --> 00:27:38,320
our water planets planets composed

627
00:27:41,350 --> 00:27:40,240
mostly of water and isis at high

628
00:27:42,870 --> 00:27:41,360
pressure

629
00:27:45,909 --> 00:27:42,880
and the ocean would be hot it would have

630
00:27:47,350 --> 00:27:45,919
maybe a steam atmosphere

631
00:27:48,789 --> 00:27:47,360
george

632
00:27:51,750 --> 00:27:48,799
luke skywalker probably doesn't live

633
00:27:53,350 --> 00:27:51,760
here either but could it have life

634
00:27:55,909 --> 00:27:53,360
well the temperature may be you know

635
00:27:58,070 --> 00:27:55,919
close to boiling but we know that in our

636
00:27:59,510 --> 00:27:58,080
own oceans the deep sea vents have

637
00:28:01,350 --> 00:27:59,520
temperatures well over boiling and

638
00:28:03,669 --> 00:28:01,360

there's lots of life that likes those

639
00:28:05,029 --> 00:28:03,679
hot temperatures so this may be an ocean

640
00:28:06,549 --> 00:28:05,039
with life

641
00:28:08,389 --> 00:28:06,559
with little creatures and big creatures

642
00:28:09,669 --> 00:28:08,399
that eat little creatures

643
00:28:11,669 --> 00:28:09,679
little creatures generally don't like

644
00:28:13,830 --> 00:28:11,679
that so when they see a predator they

645
00:28:16,070 --> 00:28:13,840
try to jump out of the water like our

646
00:28:18,070 --> 00:28:16,080
fish do in our own oceans we have flying

647
00:28:19,669 --> 00:28:18,080
fish maybe they have fish that have

648
00:28:22,230 --> 00:28:19,679
evolved into birds

649
00:28:24,789 --> 00:28:22,240
we don't know but we need people to

650
00:28:25,830 --> 00:28:24,799
generate missions to go and find out are

651
00:28:27,510 --> 00:28:25,840
there fish

652
00:28:28,830 --> 00:28:27,520
on this planet

653
00:28:31,190 --> 00:28:28,840
let's go

654
00:28:32,870 --> 00:28:31,200
on well we need to find planets close to

655
00:28:34,870 --> 00:28:32,880
the size of the earth and we are finding

656
00:28:37,430 --> 00:28:34,880
them and lots of them here are two

657
00:28:39,110 --> 00:28:37,440
planets called kepler 62 e and f and we

658
00:28:41,669 --> 00:28:39,120
have this green zone the green zone

659
00:28:43,190 --> 00:28:41,679
represents the region around a star

660
00:28:44,870 --> 00:28:43,200
where the temperature would be cool

661
00:28:46,870 --> 00:28:44,880
enough so you could have water on the

662
00:28:48,789 --> 00:28:46,880
surface of a rocky planet it's actually

663
00:28:50,070 --> 00:28:48,799

a measure of the solar flux the heating

664
00:28:52,870 --> 00:28:50,080
to that area

665
00:28:54,389 --> 00:28:52,880
and the green area to the top is smaller

666
00:28:56,470 --> 00:28:54,399
than the area

667
00:28:57,750 --> 00:28:56,480
in the bottom which represents our solar

668
00:28:59,590 --> 00:28:57,760
system

669
00:29:00,870 --> 00:28:59,600
and that's because the star that we're

670
00:29:02,950 --> 00:29:00,880
talking about is smaller it's about

671
00:29:05,269 --> 00:29:02,960
two-thirds the size of our sun so you

672
00:29:07,110 --> 00:29:05,279
have to cozy up to that star to be warm

673
00:29:08,630 --> 00:29:07,120
enough to be in the habitable zone but

674
00:29:12,070 --> 00:29:08,640
there are two planets

675
00:29:14,470 --> 00:29:12,080
the outer two 1.4 1.7 times the size of

676
00:29:16,710 --> 00:29:14,480
the earth

677
00:29:18,950 --> 00:29:16,720
in the habitable zone of a star somewhat

678
00:29:21,430 --> 00:29:18,960
similar to our own star

679
00:29:23,830 --> 00:29:21,440
so certainly a possibility of life but

680
00:29:25,750 --> 00:29:23,840
do we know there's life there we don't

681
00:29:28,149 --> 00:29:25,760
know from with kepler that it has an

682
00:29:31,510 --> 00:29:28,159
atmosphere that it has an ocean much

683
00:29:33,430 --> 00:29:31,520
less life kepler was a discovery mission

684
00:29:35,830 --> 00:29:33,440
go out and find out are there lots of

685
00:29:38,470 --> 00:29:35,840
earths and we have we are finding that

686
00:29:40,950 --> 00:29:38,480
out but there's still a lot to do in the

687
00:29:42,389 --> 00:29:40,960
future to get answers about life on

688
00:29:43,669 --> 00:29:42,399

these planets

689
00:29:45,190 --> 00:29:43,679
those plants are still a little bit

690
00:29:47,830 --> 00:29:45,200
large so let's find an earth-sized

691
00:29:49,029 --> 00:29:47,840
planet next figure please

692
00:29:51,590 --> 00:29:49,039
here again

693
00:29:53,909 --> 00:29:51,600
we have this green zone but very tiny

694
00:29:54,710 --> 00:29:53,919
compared to the green zone the habitable

695
00:29:56,230 --> 00:29:54,720
zone

696
00:29:57,669 --> 00:29:56,240
around our own sun

697
00:30:00,149 --> 00:29:57,679
and this is because the star is about

698
00:30:02,710 --> 00:30:00,159
half the size of our sun

699
00:30:04,950 --> 00:30:02,720
but it does have a star a planet

700
00:30:07,830 --> 00:30:04,960
the size of the earth indistinguishable

701
00:30:10,870 --> 00:30:07,840
from the size of in the habitable zone

702
00:30:13,430 --> 00:30:10,880
and so again does it have life we simply

703
00:30:15,750 --> 00:30:13,440
don't know the answer to that it will be

704
00:30:17,669 --> 00:30:15,760
basically left for future generations

705
00:30:20,470 --> 00:30:17,679
for the young people to go and build

706
00:30:25,110 --> 00:30:20,480
those missions and find those answers

707
00:30:30,630 --> 00:30:26,789
so let's summarize what we've learned

708
00:30:33,990 --> 00:30:30,640
here most stars have planets

709
00:30:36,149 --> 00:30:34,000
earth-sized planets are common

710
00:30:38,470 --> 00:30:36,159
planets are being found many planets

711
00:30:40,389 --> 00:30:38,480
inhabitable zone but we've not yet found

712
00:30:42,389 --> 00:30:40,399
an earth-sized planet in the handle zone

713
00:30:44,230 --> 00:30:42,399

of a stars identical to the sun we still

714
00:30:46,549 --> 00:30:44,240
have work to do

715
00:30:48,230 --> 00:30:46,559
but if you put all the numbers together

716
00:30:50,789 --> 00:30:48,240
what does that tell us we know there's

717
00:30:52,389 --> 00:30:50,799
300 billion stars in our galaxy

718
00:30:54,230 --> 00:30:52,399
a fraction of those are sun like a

719
00:30:55,909 --> 00:30:54,240
fraction of those have plants a fraction

720
00:30:57,590 --> 00:30:55,919
of earth's size a fraction of capitalism

721
00:31:00,149 --> 00:30:57,600
but the numbers come out to be of the

722
00:31:02,070 --> 00:31:00,159
order of a billion

723
00:31:06,149 --> 00:31:02,080
a billion

724
00:31:09,269 --> 00:31:06,159
earth in the habitable zone of stars

725
00:31:13,430 --> 00:31:11,029
we've made our first step in the

726
00:31:15,190 --> 00:31:13,440
exploration of our galaxy there's a lot

727
00:31:17,110 --> 00:31:15,200
out there to find

728
00:31:19,430 --> 00:31:17,120
but we have a long way to go

729
00:31:20,310 --> 00:31:19,440
do the planets have atmospheres do they

730
00:31:22,789 --> 00:31:20,320
have

731
00:31:26,470 --> 00:31:22,799
water and co2 in those atmospheres water

732
00:31:28,710 --> 00:31:26,480
and co2 what plants need to live

733
00:31:32,789 --> 00:31:28,720
what life needs and those plants of

734
00:31:35,190 --> 00:31:32,799
course can generate oxygen for animals

735
00:31:41,269 --> 00:31:35,200
is there

736
00:31:43,590 --> 00:31:41,279
intelligent life on the billion planets

737
00:31:45,350 --> 00:31:43,600
to me it leads to the big question

738
00:31:47,110 --> 00:31:45,360

and that is

739
00:31:50,389 --> 00:31:47,120
why hasn't said he heard anything from

740
00:31:51,669 --> 00:31:50,399
anybody billion planets

741
00:31:53,590 --> 00:31:51,679
silence

742
00:31:56,230 --> 00:31:53,600
they monitored tens of millions of

743
00:32:00,549 --> 00:31:56,240
channels for decades we haven't heard

744
00:32:03,110 --> 00:32:00,559
anything what does that mean

745
00:32:05,029 --> 00:32:03,120
it might mean that somehow there's a new

746
00:32:06,950 --> 00:32:05,039
communication system a new physical

747
00:32:09,669 --> 00:32:06,960
process that we know nothing about that

748
00:32:11,509 --> 00:32:09,679
we'll have to discover it might mean

749
00:32:13,350 --> 00:32:11,519
that it's very difficult for life to

750
00:32:15,750 --> 00:32:13,360
arise anywhere

751
00:32:18,310 --> 00:32:15,760
we're unusual

752
00:32:20,710 --> 00:32:18,320
life may exist in very few places in our

753
00:32:22,950 --> 00:32:20,720
galaxy it might mean that

754
00:32:25,430 --> 00:32:22,960
it might mean the opposite that it's

755
00:32:28,470 --> 00:32:25,440
easy for life to to to start we might

756
00:32:29,909 --> 00:32:28,480
find it mars and titan and enceladus all

757
00:32:32,230 --> 00:32:29,919
sorts of places

758
00:32:33,990 --> 00:32:32,240
but it doesn't evolve to intelligent

759
00:32:36,710 --> 00:32:34,000
life

760
00:32:38,710 --> 00:32:36,720
and

761
00:32:40,549 --> 00:32:38,720
people evolve to that point but then the

762
00:32:42,710 --> 00:32:40,559
catastrophe occurs they're near

763
00:32:45,269 --> 00:32:42,720

supernova and that sterilizes it an

764
00:32:47,430 --> 00:32:45,279
asteroid strikes possibly they

765
00:32:49,669 --> 00:32:47,440
themselves are unstable and get into a

766
00:32:51,430 --> 00:32:49,679
nuclear war or biological war we don't

767
00:32:53,590 --> 00:32:51,440
know the answer

768
00:32:55,350 --> 00:32:53,600
but we would sure like to

769
00:32:58,310 --> 00:32:55,360
so let me summarize finally with the

770
00:33:02,630 --> 00:33:00,710
this is a poem that was sent to us

771
00:33:05,110 --> 00:33:02,640
to the kepler

772
00:33:07,269 --> 00:33:05,120
project by a fan ray

773
00:33:09,669 --> 00:33:07,279
uh

774
00:33:11,350 --> 00:33:09,679
very good one somewhere

775
00:33:12,549 --> 00:33:11,360
somewhere there are mountains glistening

776
00:33:13,830 --> 00:33:12,559
in the snow

777
00:33:15,269 --> 00:33:13,840
some of their mountains that we shall

778
00:33:17,110 --> 00:33:15,279
never know

779
00:33:18,070 --> 00:33:17,120
somewhere there are rivers flowing fast

780
00:33:19,909 --> 00:33:18,080
and free

781
00:33:21,029 --> 00:33:19,919
some are there rivers that we can never

782
00:33:23,350 --> 00:33:21,039
see

783
00:33:24,950 --> 00:33:23,360
some are there oceans and sun drenched

784
00:33:27,190 --> 00:33:24,960
island sands

785
00:33:29,430 --> 00:33:27,200
forests full of creatures

786
00:33:31,590 --> 00:33:29,440
in vastly distant lands

787
00:33:33,190 --> 00:33:31,600
somewhere there's a planet beneath an

788
00:33:35,590 --> 00:33:33,200

alien star

789
00:33:38,630 --> 00:33:35,600
the people watch our tiny sun

790
00:33:41,430 --> 00:33:38,640
and wonder where we are one day perhaps

791
00:33:43,669 --> 00:33:41,440
we'll find them across the void of space

792
00:33:45,750 --> 00:33:43,679
perhaps through ways as yet not known

793
00:33:47,110 --> 00:33:45,760
we'll meet them face to face thank you

794
00:33:59,909 --> 00:33:47,120
and congratulations on your

795
00:34:03,430 --> 00:34:01,110
thank you mr baruchy for that

796
00:34:05,029 --> 00:34:03,440
sensational presentation we're truly

797
00:34:07,029 --> 00:34:05,039
fortunate to have you here with us today

798
00:34:08,629 --> 00:34:07,039
thank you very much mr bold and mr

799
00:34:10,869 --> 00:34:08,639
lightfoot will you please join me on

800
00:34:28,790 --> 00:34:10,879
stage for the presentation of nasa's

801
00:34:32,869 --> 00:34:30,230
ladies and gentlemen

802
00:34:34,950 --> 00:34:32,879
each year nasa recognizes individuals

803
00:34:36,790 --> 00:34:34,960
who have made a profound impact on

804
00:34:38,470 --> 00:34:36,800
nasa's mission success

805
00:34:41,430 --> 00:34:38,480
these individuals have been selected to

806
00:34:43,109 --> 00:34:41,440
receive one of two prestigious awards

807
00:34:45,030 --> 00:34:43,119
these are nasa's highest form of

808
00:34:46,950 --> 00:34:45,040
recognition that are awarded to both

809
00:34:49,430 --> 00:34:46,960
government employees

810
00:34:52,069 --> 00:34:49,440
or non-government individuals who by

811
00:34:54,710 --> 00:34:52,079
distinguished service ability

812
00:34:56,950 --> 00:34:54,720
or vision have personally contributed to

813
00:34:58,470 --> 00:34:56,960

nasa's advancement advancement of united

814
00:34:59,829 --> 00:34:58,480
states interests

815
00:35:02,870 --> 00:34:59,839
the individual's achievement or

816
00:35:04,550 --> 00:35:02,880
contribution must demonstrate

817
00:35:07,510 --> 00:35:04,560
a level of excellence that has made a

818
00:35:08,950 --> 00:35:07,520
profound or indelible impact on nasa's

819
00:35:11,109 --> 00:35:08,960
mission success

820
00:35:12,870 --> 00:35:11,119
and therefore the contribution is so

821
00:35:16,390 --> 00:35:12,880
extraordinary that other forms of

822
00:35:21,190 --> 00:35:16,400
recognition by nasa would be inadequate

823
00:35:27,990 --> 00:35:24,790
today we honor 23 in this category

824
00:35:30,230 --> 00:35:28,000
dr bruce e anderson

825
00:35:31,990 --> 00:35:30,240
is being honored for sustained

826
00:35:33,030 --> 00:35:32,000
distinguished service

827
00:35:34,870 --> 00:35:33,040
leadership

828
00:35:37,510 --> 00:35:34,880
and technical excellence within the

829
00:35:39,910 --> 00:35:37,520
research aviation community advancing

830
00:35:41,510 --> 00:35:39,920
understanding in earth science and

831
00:35:44,550 --> 00:35:41,520
aeronautics

832
00:35:46,550 --> 00:35:44,560
dr anderson's 24-year career at nasa has

833
00:35:47,829 --> 00:35:46,560
distinguished him as a respected

834
00:35:50,069 --> 00:35:47,839
researcher

835
00:35:52,710 --> 00:35:50,079
and leader of suborbital missions for

836
00:35:54,950 --> 00:35:52,720
atmospheric aerosol characterization as

837
00:35:57,750 --> 00:35:54,960
well as experimental advances to

838
00:36:00,310 --> 00:35:57,760

quantify aircraft engine emissions

839
00:36:02,630 --> 00:36:00,320
currently he serves as project scientist

840
00:36:05,030 --> 00:36:02,640
and principal investigator for aircraft

841
00:36:07,430 --> 00:36:05,040
emissions characterization studies for

842
00:36:09,190 --> 00:36:07,440
numerous experiments and studies

843
00:36:11,430 --> 00:36:09,200
widely respected for his exceptional

844
00:36:14,230 --> 00:36:11,440
leadership and technical contribution

845
00:36:15,670 --> 00:36:14,240
over the past two decades dr anderson

846
00:36:18,950 --> 00:36:15,680
has advanced our knowledge and

847
00:36:36,470 --> 00:36:18,960
understanding in aviation air quality

848
00:36:40,790 --> 00:36:39,270
miss julie m baker

849
00:36:42,150 --> 00:36:40,800
is being honored for exemplary

850
00:36:44,390 --> 00:36:42,160
leadership

851
00:36:46,230 --> 00:36:44,400
long-standing dedication

852
00:36:48,630 --> 00:36:46,240
high standards of conduct

853
00:36:50,390 --> 00:36:48,640
and infectious enthusiasm in managing

854
00:36:53,349 --> 00:36:50,400
goddard's budget and finances

855
00:36:56,470 --> 00:36:53,359
effectively and efficiently

856
00:36:58,630 --> 00:36:56,480
in 1978 miss baker began her career in

857
00:37:00,150 --> 00:36:58,640
nasa's international affairs office at

858
00:37:02,630 --> 00:37:00,160
headquarters

859
00:37:04,630 --> 00:37:02,640
in 2010 miss baker was appointed chief

860
00:37:05,990 --> 00:37:04,640
financial officer for goddard space

861
00:37:07,430 --> 00:37:06,000
flight center

862
00:37:09,270 --> 00:37:07,440
where she implements a rigorous

863
00:37:11,829 --> 00:37:09,280

financial program to ensure the

864
00:37:14,870 --> 00:37:11,839
financial health and well-being of the

865
00:37:17,990 --> 00:37:14,880
center's numerous projects and programs

866
00:37:20,230 --> 00:37:18,000
throughout her 35 years at nasa

867
00:37:23,349 --> 00:37:20,240
miss baker has utilized her astute

868
00:37:25,829 --> 00:37:23,359
knowledge of the federal budget process

869
00:37:27,910 --> 00:37:25,839
commitment to cost-benefit thinking and

870
00:37:30,150 --> 00:37:27,920
dynamic leadership to showcase

871
00:37:56,950 --> 00:37:30,160
unprecedented stewardship of nasa's

872
00:38:01,750 --> 00:37:59,589
dr james j bach who could not be with us

873
00:38:04,790 --> 00:38:01,760
today is being honored for extraordinary

874
00:38:06,550 --> 00:38:04,800
accomplishments in cosmology including

875
00:38:08,950 --> 00:38:06,560
development and application of new

876
00:38:10,870 --> 00:38:08,960
detector technology leading to dramatic

877
00:38:11,990 --> 00:38:10,880
advances in our knowledge of the

878
00:38:13,750 --> 00:38:12,000
universe

879
00:38:16,390 --> 00:38:13,760
an experimental astrophysicist and

880
00:38:18,390 --> 00:38:16,400
cosmologist for several decades dr bach

881
00:38:19,910 --> 00:38:18,400
has made profound contributions

882
00:38:22,550 --> 00:38:19,920
to several important scientific

883
00:38:24,550 --> 00:38:22,560
breakthroughs including ultra sensitive

884
00:38:27,750 --> 00:38:24,560
low temperature detectors for imaging

885
00:38:29,589 --> 00:38:27,760
the cosmic microwave background or cmb

886
00:38:31,430 --> 00:38:29,599
earlier this year dr bach and his

887
00:38:33,430 --> 00:38:31,440
colleagues made a stunning announcement

888
00:38:35,510 --> 00:38:33,440

of the detection of primordial

889
00:38:38,710 --> 00:38:35,520
gravitational waves through their unique

890
00:38:40,710 --> 00:38:38,720
signature on the polarization of cnb

891
00:38:43,030 --> 00:38:40,720
which provided strong support to the

892
00:38:45,030 --> 00:38:43,040
theory of cosmic inflation in the very

893
00:38:47,190 --> 00:38:45,040
early universe

894
00:38:49,910 --> 00:38:47,200
his new generation of ground-based and

895
00:38:52,550 --> 00:38:49,920
suborbital cmb experiments have played

896
00:38:55,190 --> 00:38:52,560
key roles in the nasa antarctic balloon

897
00:38:57,109 --> 00:38:55,200
experiment european space agency and

898
00:39:01,829 --> 00:38:57,119
nasa planck surveyor

899
00:39:04,870 --> 00:39:01,839
and esa nasa herschel space observatory

900
00:39:06,390 --> 00:39:04,880
dr thomas f brooks

901
00:39:09,109 --> 00:39:06,400
is being honored for sustained

902
00:39:11,430 --> 00:39:09,119
outstanding contributions to the science

903
00:39:14,150 --> 00:39:11,440
of the reduction of aerodynamic noise in

904
00:39:16,230 --> 00:39:14,160
the community

905
00:39:18,870 --> 00:39:16,240
dr brooks has dedicated 40 years of

906
00:39:21,270 --> 00:39:18,880
service to nasa langley research center

907
00:39:24,390 --> 00:39:21,280
in the discipline of aero acoustics the

908
00:39:26,150 --> 00:39:24,400
study of noise generation by airflow

909
00:39:28,390 --> 00:39:26,160
his pioneering efforts aimed at

910
00:39:31,109 --> 00:39:28,400
constraining unwanted aircraft noise

911
00:39:32,790 --> 00:39:31,119
within the airport boundary include work

912
00:39:34,790 --> 00:39:32,800
in helicopter rotor and fixed-wing

913
00:39:36,790 --> 00:39:34,800

airframe noise reduction

914
00:39:39,829 --> 00:39:36,800
a fellow of the american institute of

915
00:39:41,910 --> 00:39:39,839
aeronautics and astronautics or aia as

916
00:39:43,430 --> 00:39:41,920
well as the american helicopter society

917
00:39:45,430 --> 00:39:43,440
or ahs

918
00:39:47,349 --> 00:39:45,440
he holds four patents

919
00:39:48,790 --> 00:39:47,359
served as a mentor for junior engineers

920
00:39:51,430 --> 00:39:48,800
and researchers

921
00:39:54,390 --> 00:39:51,440
was awarded the prestigious aia aero

922
00:39:56,630 --> 00:39:54,400
acoustics award and participated in

923
00:39:57,670 --> 00:39:56,640
teams that won the ahs howard hughes

924
00:40:00,630 --> 00:39:57,680
award

925
00:40:02,069 --> 00:40:00,640
dr brooks says investigation research

926
00:40:04,230 --> 00:40:02,079
and technical excellence have

927
00:40:06,950 --> 00:40:04,240
contributed significantly to the pursuit

928
00:40:16,630 --> 00:40:06,960
of nasa's mission reduction to reduce

929
00:40:20,309 --> 00:40:18,950
major general lynn collier

930
00:40:22,870 --> 00:40:20,319
is being honored for distinguished

931
00:40:24,550 --> 00:40:22,880
service characterized by unusual

932
00:40:26,550 --> 00:40:24,560
initiative in leading partnership

933
00:40:28,950 --> 00:40:26,560
efforts to make marshall space flight

934
00:40:31,829 --> 00:40:28,960
center and redstone arsenal a more

935
00:40:33,829 --> 00:40:31,839
effective and efficient federal city

936
00:40:36,069 --> 00:40:33,839
for over 26 years

937
00:40:38,309 --> 00:40:36,079
major general retired colyer has served

938
00:40:39,589 --> 00:40:38,319

the federal government culminating with

939
00:40:41,510 --> 00:40:39,599
his service as the commander for

940
00:40:43,270 --> 00:40:41,520
redstone arsenal the department of

941
00:40:44,870 --> 00:40:43,280
defense installation that hosts marshall

942
00:40:47,270 --> 00:40:44,880
space flight center

943
00:40:49,349 --> 00:40:47,280
to improve the quality of life on site

944
00:40:52,069 --> 00:40:49,359
he led a comprehensive effort across the

945
00:40:53,270 --> 00:40:52,079
arsenal and the local community mobilize

946
00:40:55,030 --> 00:40:53,280
support

947
00:40:57,430 --> 00:40:55,040
re-energize the community relations

948
00:41:00,230 --> 00:40:57,440
committee and address important local

949
00:41:01,829 --> 00:41:00,240
health care and education issues

950
00:41:03,030 --> 00:41:01,839
through his innovative service and

951
00:41:05,109 --> 00:41:03,040
leadership

952
00:41:07,670 --> 00:41:05,119
he has enhanced the center's ability to

953
00:41:10,309 --> 00:41:07,680
tailor future airfield enhancements

954
00:41:12,790 --> 00:41:10,319
reduce costs and improve deficiency in

955
00:41:13,910 --> 00:41:12,800
joint 911 emergency and ambulance

956
00:41:15,510 --> 00:41:13,920
services

957
00:41:24,309 --> 00:41:15,520
and set the stage for future

958
00:41:28,230 --> 00:41:26,230
miss olga dominguez

959
00:41:30,069 --> 00:41:28,240
is being honored for her career of

960
00:41:32,309 --> 00:41:30,079
extraordinary contributions

961
00:41:33,829 --> 00:41:32,319
distinguished service and outstanding

962
00:41:36,710 --> 00:41:33,839
leadership in support of the nation

963
00:41:39,109 --> 00:41:36,720

space program and nasa's mission

964
00:41:40,950 --> 00:41:39,119
ms dominguez served as the agency's lead

965
00:41:44,230 --> 00:41:40,960
for executive leadership

966
00:41:46,069 --> 00:41:44,240
policy technical expertise and oversight

967
00:41:48,950 --> 00:41:46,079
of nasa infrastructure and management

968
00:41:50,069 --> 00:41:48,960
systems for construction of facilities

969
00:41:51,349 --> 00:41:50,079
aircraft

970
00:41:54,630 --> 00:41:51,359
environmental

971
00:41:56,550 --> 00:41:54,640
real property logistics and strategic

972
00:41:58,950 --> 00:41:56,560
capabilities programs

973
00:42:00,950 --> 00:41:58,960
most notably as assistant administrator

974
00:42:02,550 --> 00:42:00,960
for strategic infrastructure she

975
00:42:04,630 --> 00:42:02,560
effectively implemented nasa's

976
00:42:07,510 --> 00:42:04,640
continuous risk management requirements

977
00:42:09,829 --> 00:42:07,520
at the institutional level

978
00:42:12,069 --> 00:42:09,839
her vision and effort was a paradigm

979
00:42:14,550 --> 00:42:12,079
shifting and leadership on environmental

980
00:42:16,630 --> 00:42:14,560
management issues have led nasa to

981
00:42:18,870 --> 00:42:16,640
prominence among federal agencies for

982
00:42:20,630 --> 00:42:18,880
sustainable practices

983
00:42:22,470 --> 00:42:20,640
while citing only a fraction of ms

984
00:42:24,069 --> 00:42:22,480
dominguez's accomplishments her

985
00:42:26,630 --> 00:42:24,079
contributions to the nascent space

986
00:42:42,870 --> 00:42:26,640
program and her leadership at nasa have

987
00:42:46,630 --> 00:42:45,190
miss laurie b garver

988
00:42:47,589 --> 00:42:46,640

is being honored for distinguished

989
00:42:49,510 --> 00:42:47,599
service

990
00:42:50,950 --> 00:42:49,520
remarkable leadership

991
00:42:54,630 --> 00:42:50,960
and great vision in support of the

992
00:42:57,030 --> 00:42:54,640
nation space program and nasa's mission

993
00:42:59,270 --> 00:42:57,040
nominated by president barack obama and

994
00:43:00,950 --> 00:42:59,280
confirmed by the u.s senate ms garver

995
00:43:03,510 --> 00:43:00,960
began her duties as nasa's deputy

996
00:43:05,030 --> 00:43:03,520
administrator in july 2009

997
00:43:07,349 --> 00:43:05,040
serving four years as the second in

998
00:43:09,670 --> 00:43:07,359
command to provide overall leadership

999
00:43:10,710 --> 00:43:09,680
planning and policy direction for the

1000
00:43:12,790 --> 00:43:10,720
agency

1001
00:43:14,470 --> 00:43:12,800
during her time as deputy administrator

1002
00:43:17,030 --> 00:43:14,480
she held numerous senior senior

1003
00:43:19,190 --> 00:43:17,040
positions in space policy was a member

1004
00:43:20,790 --> 00:43:19,200
of the nasa advisory council

1005
00:43:22,550 --> 00:43:20,800
a guest lecturer at the international

1006
00:43:24,870 --> 00:43:22,560
space university

1007
00:43:26,790 --> 00:43:24,880
president of women in aerospace and

1008
00:43:27,990 --> 00:43:26,800
president of the american astronautical

1009
00:43:30,069 --> 00:43:28,000
society

1010
00:43:32,470 --> 00:43:30,079
ms garver's contributions in support of

1011
00:43:34,790 --> 00:43:32,480
human space exploration technology

1012
00:43:37,430 --> 00:43:34,800
development earth science and

1013
00:43:53,910 --> 00:43:37,440

aeronautics research decisively enabled

1014
00:43:58,550 --> 00:43:56,309
dr james e hansen who could not be with

1015
00:44:00,390 --> 00:43:58,560
us here today is being honored for

1016
00:44:02,630 --> 00:44:00,400
achievement in exceptional service in

1017
00:44:03,910 --> 00:44:02,640
support of nasa's mission and vision for

1018
00:44:06,069 --> 00:44:03,920
the future

1019
00:44:09,309 --> 00:44:06,079
serving as director of nasa's goddard

1020
00:44:12,710 --> 00:44:09,319
institute for space studies from 1981 to

1021
00:44:15,109 --> 00:44:12,720
2013 dr hanson was the longest serving

1022
00:44:17,109 --> 00:44:15,119
director in the institute's history

1023
00:44:19,510 --> 00:44:17,119
his early research used telescopic

1024
00:44:21,829 --> 00:44:19,520
observations of venus to extract

1025
00:44:23,589 --> 00:44:21,839
detailed information on the physical

1026
00:44:26,630 --> 00:44:23,599
properties of the cloud and haze

1027
00:44:28,470 --> 00:44:26,640
particles that veil venus

1028
00:44:30,630 --> 00:44:28,480
his later studies focused on computer

1029
00:44:32,470 --> 00:44:30,640
simulation of earth's climate working to

1030
00:44:35,030 --> 00:44:32,480
understand the climate system and the

1031
00:44:36,790 --> 00:44:35,040
human impacts on the global climate

1032
00:44:39,190 --> 00:44:36,800
in addition to his numerous worldwide

1033
00:44:41,910 --> 00:44:39,200
awards and recognitions dr hanson

1034
00:44:43,670 --> 00:44:41,920
authored storms of my grandchildren and

1035
00:44:46,150 --> 00:44:43,680
serves as the adjunct professor for

1036
00:44:55,510 --> 00:44:46,160
earth and environmental sciences at the

1037
00:45:00,069 --> 00:44:58,069
miss laurie n hanson who also could not

1038
00:45:01,829 --> 00:45:00,079

be with us here today is being honored

1039
00:45:04,069 --> 00:45:01,839
for distinguished strategic leadership

1040
00:45:06,470 --> 00:45:04,079
and sustaining engineering contributions

1041
00:45:08,470 --> 00:45:06,480
vital to the success of nasa's programs

1042
00:45:10,390 --> 00:45:08,480
and johnson space center's achievement

1043
00:45:12,390 --> 00:45:10,400
of agency objectives

1044
00:45:14,150 --> 00:45:12,400
during her 30-year career

1045
00:45:15,990 --> 00:45:14,160
ms hanson has demonstrated distinguished

1046
00:45:18,390 --> 00:45:16,000
innovative technical ability and

1047
00:45:20,390 --> 00:45:18,400
influential consensus building in key

1048
00:45:21,829 --> 00:45:20,400
management roles including deputy

1049
00:45:23,510 --> 00:45:21,839
manager of the international space

1050
00:45:25,750 --> 00:45:23,520
station program office

1051
00:45:27,829 --> 00:45:25,760
deputy director of engineering and

1052
00:45:29,510 --> 00:45:27,839
director of safety reliability and

1053
00:45:30,390 --> 00:45:29,520
quality assurance for the constellation

1054
00:45:33,589 --> 00:45:30,400
program

1055
00:45:35,670 --> 00:45:33,599
ms hanson exemplifies nasa's core values

1056
00:45:38,150 --> 00:45:35,680
by embracing forward thinking as she

1057
00:45:46,230 --> 00:45:38,160
continuously strives to develop safe and

1058
00:45:50,230 --> 00:45:48,550
dr james r irons

1059
00:45:52,550 --> 00:45:50,240
is being honored for distinguished

1060
00:45:54,870 --> 00:45:52,560
service to nasa's earth science

1061
00:45:57,349 --> 00:45:54,880
displayed by his tirelessly tireless

1062
00:45:59,910 --> 00:45:57,359
leadership wisdom and guidance of the

1063
00:46:03,270 --> 00:45:59,920

landsat program and the landsat data

1064
00:46:04,950 --> 00:46:03,280
continuity mission or ldcm project

1065
00:46:07,109 --> 00:46:04,960
with more than 20 years of pioneering

1066
00:46:10,390 --> 00:46:07,119
contributions to nasa and the landsat

1067
00:46:12,870 --> 00:46:10,400
program dr irons is a well-published and

1068
00:46:14,470 --> 00:46:12,880
internationally respected scientist

1069
00:46:16,550 --> 00:46:14,480
serving as the co-chair of the united

1070
00:46:19,270 --> 00:46:16,560
states geological survey

1071
00:46:21,510 --> 00:46:19,280
nasa landsat science team his leadership

1072
00:46:24,230 --> 00:46:21,520
was positively influence the science and

1073
00:46:26,390 --> 00:46:24,240
technology contributions of this mission

1074
00:46:28,790 --> 00:46:26,400
as a result of dr iron's diligent

1075
00:46:30,950 --> 00:46:28,800
advocacy for the continual

1076
00:46:34,069 --> 00:46:30,960
thermal imagery infrared measurements

1077
00:46:36,630 --> 00:46:34,079
for the ldcm landsat 8 is now generating

1078
00:46:38,630 --> 00:46:36,640
magnificent thermal energy imagery

1079
00:46:40,870 --> 00:46:38,640
moreover his contributions among goddard

1080
00:46:42,950 --> 00:46:40,880
space flight center agency and

1081
00:46:45,829 --> 00:46:42,960
international partners have created a

1082
00:46:48,150 --> 00:46:45,839
myriad of multinational initiatives

1083
00:46:50,470 --> 00:46:48,160
advanced earth remote sensing across the

1084
00:47:00,069 --> 00:46:50,480
globe and served as the model for future

1085
00:47:04,230 --> 00:47:02,230
mr scott kerr who could not be with us

1086
00:47:06,870 --> 00:47:04,240
today is being honored for sustained

1087
00:47:08,630 --> 00:47:06,880
distinguished service dedication and

1088
00:47:11,190 --> 00:47:08,640

contributions to nasa and the kennedy

1089
00:47:14,230 --> 00:47:11,200
space center with his retirement from

1090
00:47:17,190 --> 00:47:14,240
kennedy space center ksc in 2013

1091
00:47:19,349 --> 00:47:17,200
mr kerr dedicated 25 years to nasa in

1092
00:47:21,829 --> 00:47:19,359
various leadership positions including

1093
00:47:22,829 --> 00:47:21,839
serving in the senior executive service

1094
00:47:25,510 --> 00:47:22,839
since

1095
00:47:27,430 --> 00:47:25,520
1999. his role as director of ground

1096
00:47:29,670 --> 00:47:27,440
processing at ksc

1097
00:47:31,349 --> 00:47:29,680
he provided direction for all flight

1098
00:47:32,790 --> 00:47:31,359
hardware processing

1099
00:47:34,710 --> 00:47:32,800
at ksc

1100
00:47:37,430 --> 00:47:34,720
and activities and operations as well as

1101
00:47:40,390 --> 00:47:37,440
maintenance of associated ground systems

1102
00:47:41,430 --> 00:47:40,400
in 1995 mr kerr was selected as a nasa

1103
00:47:43,349 --> 00:47:41,440
fellow

1104
00:47:45,670 --> 00:47:43,359
attending the prestigious massachusetts

1105
00:47:47,589 --> 00:47:45,680
of institute of technology center for

1106
00:47:48,790 --> 00:47:47,599
advanced engineering studies

1107
00:47:52,230 --> 00:47:48,800
over the year

1108
00:47:54,230 --> 00:47:52,240
indelible mark of equality and

1109
00:47:55,990 --> 00:47:54,240
excellence in his work always taking

1110
00:47:56,870 --> 00:47:56,000
time to mentor the next generation of

1111
00:48:01,430 --> 00:47:56,880
leaders

1112
00:48:04,390 --> 00:48:01,440
personal caring attention contributed

1113
00:48:11,109 --> 00:48:04,400

substantially to both ksc and nasa

1114
00:48:14,950 --> 00:48:13,190
miss margaret kiefer

1115
00:48:17,510 --> 00:48:14,960
is being honored for outstanding

1116
00:48:19,430 --> 00:48:17,520
profound and lasting contributions to

1117
00:48:21,190 --> 00:48:19,440
the advancement of nasa's mission and

1118
00:48:22,710 --> 00:48:21,200
the achievement of u.s national

1119
00:48:24,710 --> 00:48:22,720
objectives

1120
00:48:26,309 --> 00:48:24,720
ms kiefer's professional career spanning

1121
00:48:28,230 --> 00:48:26,319
the last 20 years

1122
00:48:30,710 --> 00:48:28,240
has revealed a seasoned manager and

1123
00:48:32,309 --> 00:48:30,720
accomplished leader whose conscientious

1124
00:48:34,309 --> 00:48:32,319
efforts have made significant

1125
00:48:37,430 --> 00:48:34,319
contributions to the strategic

1126
00:48:39,829 --> 00:48:37,440
objectives of both nasa and the nation

1127
00:48:42,309 --> 00:48:39,839
most recently she assumed the difficult

1128
00:48:46,150 --> 00:48:42,319
yet distinguished role as nasa's lead

1129
00:48:48,069 --> 00:48:46,160
official for united nations matters

1130
00:48:49,829 --> 00:48:48,079
completed revisions to the nasa's

1131
00:48:52,630 --> 00:48:49,839
procedures establishing the office of

1132
00:48:55,190 --> 00:48:52,640
international and interagency relations

1133
00:48:58,150 --> 00:48:55,200
as the agency focal point for tracking

1134
00:49:00,309 --> 00:48:58,160
of classified interagency agreements

1135
00:49:02,069 --> 00:49:00,319
and served as the principal negotiator

1136
00:49:03,270 --> 00:49:02,079
of the national space transportation

1137
00:49:05,109 --> 00:49:03,280
policy

1138
00:49:07,670 --> 00:49:05,119

with a long record of unfailing

1139
00:49:09,270 --> 00:49:07,680
leadership in support of critical nasa

1140
00:49:11,349 --> 00:49:09,280
and national goals

1141
00:49:12,870 --> 00:49:11,359
miss kiefer's successful initiatives

1142
00:49:15,190 --> 00:49:12,880
have improved the integrity of the

1143
00:49:17,270 --> 00:49:15,200
interagency agreement processes

1144
00:49:18,470 --> 00:49:17,280
and enable strategic approaches for key

1145
00:49:20,230 --> 00:49:18,480
partnerships

1146
00:49:35,510 --> 00:49:20,240
thereby strengthening nasa's future

1147
00:49:39,990 --> 00:49:38,230
mr douglas b leviton

1148
00:49:41,910 --> 00:49:40,000
is being honored for more than 30 years

1149
00:49:43,670 --> 00:49:41,920
of distinguished service to advance

1150
00:49:45,670 --> 00:49:43,680
nasa's science and technology goals

1151
00:49:48,630 --> 00:49:45,680
worldwide by conquering some of the

1152
00:49:51,990 --> 00:49:48,640
agency's most technical challenges

1153
00:49:54,309 --> 00:49:52,000
beginning his work in 1983 as a lead

1154
00:49:55,990 --> 00:49:54,319
optics engineer for three sub-systems

1155
00:49:56,870 --> 00:49:56,000
for the cosmic background explorer

1156
00:49:59,109 --> 00:49:56,880
mission

1157
00:50:01,910 --> 00:49:59,119
mr levitan's technical knowledge

1158
00:50:03,910 --> 00:50:01,920
problem-solving abilities and creativity

1159
00:50:04,790 --> 00:50:03,920
helped achieve unprecedented scientific

1160
00:50:07,349 --> 00:50:04,800
goals

1161
00:50:09,430 --> 00:50:07,359
for the last 10 years mr levitan's

1162
00:50:12,230 --> 00:50:09,440
technical leadership role on the james

1163
00:50:14,549 --> 00:50:12,240

webb space telescope's optical telescope

1164
00:50:16,790 --> 00:50:14,559
element team has provided unparalleled

1165
00:50:19,270 --> 00:50:16,800
insight to mitigate risks and

1166
00:50:21,910 --> 00:50:19,280
successfully solve challenges

1167
00:50:24,230 --> 00:50:21,920
with innumerable inventions publications

1168
00:50:26,230 --> 00:50:24,240
and patents mr levitan has forged a

1169
00:50:28,549 --> 00:50:26,240
remarkable path in the field of optical

1170
00:50:31,349 --> 00:50:28,559
engineering one that will allow nasa to

1171
00:50:41,750 --> 00:50:31,359
contribute continue achieving project

1172
00:50:45,829 --> 00:50:44,230
mr leland d melvin

1173
00:50:47,990 --> 00:50:45,839
is being honored for a career of

1174
00:50:50,309 --> 00:50:48,000
extraordinary contributions

1175
00:50:52,230 --> 00:50:50,319
distinguished service and outstanding

1176
00:50:53,589 --> 00:50:52,240
leadership in support of the nation

1177
00:50:57,109 --> 00:50:53,599
space program

1178
00:50:59,589 --> 00:50:57,119
nasa's mission and stem education

1179
00:51:01,270 --> 00:50:59,599
throughout his career mr melvin has been

1180
00:51:03,589 --> 00:51:01,280
a zealous advocate for promoting

1181
00:51:05,990 --> 00:51:03,599
innovative approaches in science

1182
00:51:08,309 --> 00:51:06,000
technology engineering and mathematics

1183
00:51:09,829 --> 00:51:08,319
or stem education nationally and

1184
00:51:12,470 --> 00:51:09,839
internationally

1185
00:51:14,309 --> 00:51:12,480
his 24-year nasa career began at langley

1186
00:51:17,910 --> 00:51:14,319
research center continued in the

1187
00:51:20,150 --> 00:51:17,920
astronauts corps from 1998 to 2009 and

1188
00:51:22,549 --> 00:51:20,160

progressed in 2010 to leading the

1189
00:51:24,549 --> 00:51:22,559
agency's office of education as the

1190
00:51:26,870 --> 00:51:24,559
associate administrator

1191
00:51:29,030 --> 00:51:26,880
as the co-manager of nasa's educator

1192
00:51:31,510 --> 00:51:29,040
astronaut program mr melvin traveled

1193
00:51:33,670 --> 00:51:31,520
across the country engaging thousands of

1194
00:51:35,910 --> 00:51:33,680
students and teachers in the excitement

1195
00:51:38,309 --> 00:51:35,920
of space exploration and inspiring them

1196
00:51:40,309 --> 00:51:38,319
to pursue stem careers

1197
00:51:42,309 --> 00:51:40,319
he has served the astronaut office space

1198
00:51:44,870 --> 00:51:42,319
station operations branch and the

1199
00:51:47,270 --> 00:51:44,880
robotics branch of the astronaut office

1200
00:51:49,190 --> 00:51:47,280
as associate administrator for education

1201
00:51:50,950 --> 00:51:49,200
he was also co-chairman of the white

1202
00:51:52,390 --> 00:51:50,960
house office of science and technology

1203
00:52:03,109 --> 00:51:52,400
policy committee

1204
00:52:07,990 --> 00:52:06,150
mr arthur f rick obenshain who cannot be

1205
00:52:09,990 --> 00:52:08,000
with us today is being honored for

1206
00:52:12,150 --> 00:52:10,000
distinguished service and contributions

1207
00:52:14,150 --> 00:52:12,160
to the goddard space flight center

1208
00:52:16,870 --> 00:52:14,160
enhancing its mission to transform human

1209
00:52:18,630 --> 00:52:16,880
understanding of earth and space

1210
00:52:20,950 --> 00:52:18,640
with more than 40 years of service to

1211
00:52:23,430 --> 00:52:20,960
nasa and in particular dedication to the

1212
00:52:25,750 --> 00:52:23,440
goddard space flight center or gsfc

1213
00:52:28,790 --> 00:52:25,760

mr obenchain has provided unprecedented

1214
00:52:30,870 --> 00:52:28,800
leadership for 60 plus missions

1215
00:52:32,710 --> 00:52:30,880
his expertise in technical contributions

1216
00:52:33,990 --> 00:52:32,720
in aerospace and weather satellite

1217
00:52:35,829 --> 00:52:34,000
systems

1218
00:52:38,549 --> 00:52:35,839
have been integral to the success of the

1219
00:52:41,190 --> 00:52:38,559
lunar atmosphere and dust environment

1220
00:52:43,829 --> 00:52:41,200
explorer or lady mission and the joint

1221
00:52:46,230 --> 00:52:43,839
polar satellite systems program

1222
00:52:48,230 --> 00:52:46,240
throughout his career he has delivered

1223
00:52:49,190 --> 00:52:48,240
launched and operated space flight

1224
00:52:50,950 --> 00:52:49,200
systems

1225
00:52:52,710 --> 00:52:50,960
while helping to develop future leaders

1226
00:53:00,150 --> 00:52:52,720
and inspire the next generation of space

1227
00:53:04,630 --> 00:53:02,710
dr john olson

1228
00:53:06,790 --> 00:53:04,640
is being honored for the sustained and

1229
00:53:08,309 --> 00:53:06,800
unwavering commitment to the advancement

1230
00:53:10,630 --> 00:53:08,319
of the nation's human space flight

1231
00:53:13,510 --> 00:53:10,640
program and strategic planning for

1232
00:53:16,630 --> 00:53:13,520
international exploration beyond earth

1233
00:53:18,630 --> 00:53:16,640
dr olson joined nasa in 2004 serving in

1234
00:53:20,549 --> 00:53:18,640
various leadership positions before

1235
00:53:22,549 --> 00:53:20,559
becoming director of strategic analysis

1236
00:53:24,630 --> 00:53:22,559
and integration division in the human

1237
00:53:27,190 --> 00:53:24,640
exploration and operations mission

1238
00:53:30,230 --> 00:53:27,200

directorate at nasa headquarters

1239
00:53:33,109 --> 00:53:30,240
he directed and integrated nasa's human

1240
00:53:35,430 --> 00:53:33,119
and robotic exploration activities and

1241
00:53:37,109 --> 00:53:35,440
led efforts to support retirement of the

1242
00:53:39,109 --> 00:53:37,119
space shuttle and transition to the

1243
00:53:41,109 --> 00:53:39,119
constellation program

1244
00:53:43,750 --> 00:53:41,119
he envisioned today's human spaceflight

1245
00:53:45,589 --> 00:53:43,760
strategy the capability driven framework

1246
00:53:48,150 --> 00:53:45,599
becoming the foundation for global

1247
00:53:50,470 --> 00:53:48,160
exploration roadmap now supported by

1248
00:53:52,150 --> 00:53:50,480
international space agencies

1249
00:53:53,670 --> 00:53:52,160
in 2012

1250
00:53:55,589 --> 00:53:53,680
he was detailed to serve as the

1251
00:53:57,670 --> 00:53:55,599
nationally recognized space policy

1252
00:53:59,750 --> 00:53:57,680
leader at the office of science and

1253
00:54:01,430 --> 00:53:59,760
technology policy in the executive

1254
00:54:03,109 --> 00:54:01,440
office of the president

1255
00:54:05,589 --> 00:54:03,119
where he was the driving force behind

1256
00:54:07,270 --> 00:54:05,599
the national space transportation policy

1257
00:54:09,510 --> 00:54:07,280
and international human space

1258
00:54:11,670 --> 00:54:09,520
exploration effort

1259
00:54:13,829 --> 00:54:11,680
he concurrently supports the assistant

1260
00:54:17,109 --> 00:54:13,839
secretary of defense for research and

1261
00:54:19,349 --> 00:54:17,119
engineering as a military reservist

1262
00:54:22,069 --> 00:54:19,359
dr olson service to country

1263
00:54:29,510 --> 00:54:22,079

commitment and dedication represents the

1264
00:54:34,950 --> 00:54:30,790
mr

1265
00:54:36,789 --> 00:54:34,960
is being honored for extraordinary and

1266
00:54:39,349 --> 00:54:36,799
distinguished leadership service in the

1267
00:54:41,109 --> 00:54:39,359
development of nasa's human space flight

1268
00:54:42,470 --> 00:54:41,119
science and technology missions and

1269
00:54:45,510 --> 00:54:42,480
program

1270
00:54:47,670 --> 00:54:45,520
throughout his 34-year career at nasa mr

1271
00:54:50,150 --> 00:54:47,680
pearson has successfully led engineering

1272
00:54:53,030 --> 00:54:50,160
teams to deliver human-rated spaceflight

1273
00:54:55,190 --> 00:54:53,040
hardware and contributed profoundly by

1274
00:54:56,950 --> 00:54:55,200
leading design organizations in the

1275
00:54:59,030 --> 00:54:56,960
development of state-of-the-art

1276
00:55:00,710 --> 00:54:59,040
environmental control and life support

1277
00:55:02,150 --> 00:55:00,720
system for the international space

1278
00:55:04,230 --> 00:55:02,160
station

1279
00:55:06,549 --> 00:55:04,240
his contributions to the shuttle program

1280
00:55:09,270 --> 00:55:06,559
including diagnosis of critical sensor

1281
00:55:10,470 --> 00:55:09,280
design flaws were significant to its

1282
00:55:12,950 --> 00:55:10,480
success

1283
00:55:15,030 --> 00:55:12,960
most recently mr pearson's leadership

1284
00:55:16,789 --> 00:55:15,040
was key in developing the fast

1285
00:55:20,390 --> 00:55:16,799
affordable science and technology

1286
00:55:22,069 --> 00:55:20,400
satellite nasa's first mini satellite he

1287
00:55:23,910 --> 00:55:22,079
and his body of work continue to

1288
00:55:25,270 --> 00:55:23,920

represent the best in nasa's senior

1289
00:55:27,109 --> 00:55:25,280
leadership team

1290
00:55:39,829 --> 00:55:27,119
making lasting contributions for the

1291
00:55:44,390 --> 00:55:42,069
dr michael ruskevich who could not be

1292
00:55:46,870 --> 00:55:44,400
with us here today is being honored for

1293
00:55:49,270 --> 00:55:46,880
sustained an exemplary contribution to

1294
00:55:50,950 --> 00:55:49,280
nasa's leadership engineering missions

1295
00:55:53,270 --> 00:55:50,960
and programs

1296
00:55:55,990 --> 00:55:53,280
dr ruskevich has been an incredible

1297
00:55:57,670 --> 00:55:56,000
asset to nasa for over 30 years

1298
00:55:59,990 --> 00:55:57,680
his leadership as the agency's chief

1299
00:56:02,549 --> 00:56:00,000
engineer provided commendable oversight

1300
00:56:04,789 --> 00:56:02,559
to the review and technical readiness of

1301
00:56:07,109 --> 00:56:04,799
all nasa programs including the hubble

1302
00:56:09,270 --> 00:56:07,119
space telescope the james webb space

1303
00:56:11,270 --> 00:56:09,280
telescope the lunar reconnaissance

1304
00:56:13,589 --> 00:56:11,280
reconnaissance orbiter mission and the

1305
00:56:15,670 --> 00:56:13,599
cosmic background explorer mission he

1306
00:56:17,670 --> 00:56:15,680
made significant contributions to the

1307
00:56:19,910 --> 00:56:17,680
creation of the nasa engineering safety

1308
00:56:22,230 --> 00:56:19,920
center and the depth and breadth of his

1309
00:56:30,390 --> 00:56:22,240
notable efforts richly deserve this

1310
00:56:34,150 --> 00:56:32,470
dr laila van who also could not be with

1311
00:56:36,630 --> 00:56:34,160
us here today is being honored for a

1312
00:56:38,710 --> 00:56:36,640
career of extraordinary contributions

1313
00:56:40,309 --> 00:56:38,720

distinguished service and outstanding

1314
00:56:42,789 --> 00:56:40,319
leadership in support of the nation's

1315
00:56:45,349 --> 00:56:42,799
science program and nasa missions

1316
00:56:47,349 --> 00:56:45,359
during dr van's 32 years at nasa she's

1317
00:56:49,190 --> 00:56:47,359
distinguished herself in the leadership

1318
00:56:52,069 --> 00:56:49,200
of several important missions of

1319
00:56:54,390 --> 00:56:52,079
scientific discovery such as the clouds

1320
00:56:57,190 --> 00:56:54,400
and the earth's radiant energy system

1321
00:56:58,789 --> 00:56:57,200
experiment the cloud aerosol lidar and

1322
00:57:01,190 --> 00:56:58,799
infrared pathfinder satellite

1323
00:57:03,109 --> 00:57:01,200
observation mission the sounding of the

1324
00:57:04,870 --> 00:57:03,119
atmosphere using broadband emission

1325
00:57:07,910 --> 00:57:04,880
radiometry instrument

1326
00:57:09,990 --> 00:57:07,920
and the deriving information on surface

1327
00:57:12,390 --> 00:57:10,000
conditions from column and vertically

1328
00:57:14,230 --> 00:57:12,400
resolved observations relative

1329
00:57:15,589 --> 00:57:14,240
to the air quality earth venture

1330
00:57:17,510 --> 00:57:15,599
airborne mission

1331
00:57:19,990 --> 00:57:17,520
dr van's sustained scientific

1332
00:57:22,870 --> 00:57:20,000
contributions continue to provide key

1333
00:57:25,030 --> 00:57:22,880
information for climate studies thereby

1334
00:57:32,630 --> 00:57:25,040
advancing nasa and the nation's science

1335
00:57:36,870 --> 00:57:35,109
dr richard vondrock who also cannot be

1336
00:57:38,710 --> 00:57:36,880
with us here today is being honored for

1337
00:57:41,030 --> 00:57:38,720
extraordinary career achievements in

1338
00:57:43,349 --> 00:57:41,040

accomplishing nasa's mission advancing

1339
00:57:45,270 --> 00:57:43,359
scientific knowledge and developing the

1340
00:57:46,309 --> 00:57:45,280
next generation of nasa scientists and

1341
00:57:48,470 --> 00:57:46,319
leaders

1342
00:57:50,870 --> 00:57:48,480
in his more than 40 years as a space

1343
00:57:52,470 --> 00:57:50,880
scientist dr vondrick has been a key

1344
00:57:54,230 --> 00:57:52,480
leader at nasa

1345
00:57:56,150 --> 00:57:54,240
exemplifying a remarkable record of

1346
00:57:57,270 --> 00:57:56,160
sustained performance and exceptional

1347
00:57:58,870 --> 00:57:57,280
achievement

1348
00:58:01,829 --> 00:57:58,880
throughout his career he has produced

1349
00:58:04,230 --> 00:58:01,839
more than 100 peer-reviewed publications

1350
00:58:06,390 --> 00:58:04,240
as well as advocated for and implemented

1351
00:58:08,470 --> 00:58:06,400
numerous interagency partnerships and

1352
00:58:10,309 --> 00:58:08,480
student outreach activities

1353
00:58:12,789 --> 00:58:10,319
his career achievements exemplify the

1354
00:58:14,710 --> 00:58:12,799
highest agency values and have made a

1355
00:58:22,470 --> 00:58:14,720
profound impact on nash's mission

1356
00:58:25,990 --> 00:58:24,230
miss myron webb who also could not be

1357
00:58:28,309 --> 00:58:26,000
with us here today is being honored for

1358
00:58:30,390 --> 00:58:28,319
a career of extraordinary contributions

1359
00:58:32,470 --> 00:58:30,400
distinguished service and outstanding

1360
00:58:35,430 --> 00:58:32,480
leadership in sharing and shaping the

1361
00:58:38,069 --> 00:58:35,440
story of stennis space center and nasa

1362
00:58:40,069 --> 00:58:38,079
during her 28-year career with nasa miss

1363
00:58:42,789 --> 00:58:40,079

webb enhanced the recognition and

1364
00:58:46,470 --> 00:58:42,799
prominence of the john c stennis space

1365
00:58:48,230 --> 00:58:46,480
center or ssc as nasa's premier rocket

1366
00:58:50,710 --> 00:58:48,240
engine text complex

1367
00:58:54,069 --> 00:58:50,720
one-of-a-kind federal city and major

1368
00:58:55,990 --> 00:58:54,079
economic asset on local state and

1369
00:58:57,990 --> 00:58:56,000
national levels

1370
00:59:00,950 --> 00:58:58,000
her high-caliber contributions paved the

1371
00:59:03,190 --> 00:59:00,960
way to build the infiniti science center

1372
00:59:10,950 --> 00:59:03,200
advancing nasa's education mission for

1373
00:59:16,069 --> 00:59:14,150
dr woodrow whitlow jr

1374
00:59:18,470 --> 00:59:16,079
is being honored for a career of

1375
00:59:20,710 --> 00:59:18,480
extraordinary contributions

1376
00:59:22,390 --> 00:59:20,720
distinguished service and outstanding

1377
00:59:25,510 --> 00:59:22,400
leadership in support of the nation's

1378
00:59:28,549 --> 00:59:25,520
space program and nasa's mission

1379
00:59:31,589 --> 00:59:28,559
upon his retirement in august 2013 dr

1380
00:59:33,349 --> 00:59:31,599
whitlow served nasa for 34 years

1381
00:59:35,750 --> 00:59:33,359
beginning his professional career as a

1382
00:59:38,150 --> 00:59:35,760
research scientist and concluding with

1383
00:59:40,470 --> 00:59:38,160
his work as the associate administrator

1384
00:59:42,390 --> 00:59:40,480
for mission support at nasa headquarters

1385
00:59:45,190 --> 00:59:42,400
where he is credited with streamlining

1386
00:59:47,829 --> 00:59:45,200
nasa missions by realigning the agency's

1387
00:59:49,670 --> 00:59:47,839
workforce and infrastructure

1388
00:59:51,190 --> 00:59:49,680

with a phd in aeronautics and

1389
00:59:52,950 --> 00:59:51,200
astronautics from the massachusetts

1390
00:59:55,270 --> 00:59:52,960
institute of technology

1391
00:59:57,270 --> 00:59:55,280
dr whitlow received numerous awards and

1392
00:59:59,829 --> 00:59:57,280
accolades for his leadership he has

1393
01:00:02,630 --> 00:59:59,839
written nearly 40 technical papers

1394
01:00:05,750 --> 01:00:02,640
most in the areas of unstudied transonic

1395
01:00:07,510 --> 01:00:05,760
flow and aero elasticity

1396
01:00:09,270 --> 01:00:07,520
as a fellow of the american institute of

1397
01:00:11,190 --> 01:00:09,280
aeronautics and astronautics his

1398
01:00:13,030 --> 01:00:11,200
commitment to the scientific excellence

1399
01:00:29,990 --> 01:00:13,040
and outstanding leadership left an

1400
01:00:35,270 --> 01:00:33,670
brigadier general retired michael wooley

1401
01:00:36,470 --> 01:00:35,280
is being honored for his distinguished

1402
01:00:38,870 --> 01:00:36,480
services

1403
01:00:41,829 --> 01:00:38,880
to the nation space program as nasa

1404
01:00:43,750 --> 01:00:41,839
general counsel and to the many who are

1405
01:00:45,430 --> 01:00:43,760
equally proud and of honor to have

1406
01:00:47,670 --> 01:00:45,440
served with him

1407
01:00:49,829 --> 01:00:47,680
with his decade-long leadership of the

1408
01:00:51,430 --> 01:00:49,839
nasa legal team gerald wooley

1409
01:00:54,150 --> 01:00:51,440
transformed the legal practice at

1410
01:00:56,549 --> 01:00:54,160
headquarters and throughout the agency

1411
01:00:58,870 --> 01:00:56,559
in particular he helped three nasa

1412
01:01:01,030 --> 01:00:58,880
administrators navigate complex and

1413
01:01:03,190 --> 01:01:01,040

sensitive issues giving critical

1414
01:01:05,510 --> 01:01:03,200
stewardship the legal challenges

1415
01:01:08,150 --> 01:01:05,520
associated with the expansion of nasa's

1416
01:01:10,549 --> 01:01:08,160
traditional focus on the acquisition and

1417
01:01:12,710 --> 01:01:10,559
program management to embrace new and

1418
01:01:15,109 --> 01:01:12,720
challenging roles as the commercial

1419
01:01:17,109 --> 01:01:15,119
space customer and partner

1420
01:01:18,390 --> 01:01:17,119
general wooley also provided invaluable

1421
01:01:21,109 --> 01:01:18,400
council through the space shuttle

1422
01:01:23,270 --> 01:01:21,119
retirement and post shuttle era with

1423
01:01:26,230 --> 01:01:23,280
special focus in workforce contraction

1424
01:01:28,390 --> 01:01:26,240
issues contractor pension funding

1425
01:01:30,710 --> 01:01:28,400
disposition of orbiters

1426
01:01:33,349 --> 01:01:30,720
and transition of kennedy space center

1427
01:01:35,990 --> 01:01:33,359
to a multi-user complex

1428
01:01:37,750 --> 01:01:36,000
along with his incisive legal expertise

1429
01:01:39,990 --> 01:01:37,760
he established a robust acquisition

1430
01:01:42,549 --> 01:01:40,000
integrity program and automated

1431
01:01:44,710 --> 01:01:42,559
financial disclosure reporting system

1432
01:01:55,910 --> 01:01:44,720
guiding nasa's legal team and its

1433
01:02:00,789 --> 01:01:58,150
our second and final presentation is the

1434
01:02:04,470 --> 01:02:00,799
distinguished public service medal

1435
01:02:07,109 --> 01:02:04,480
today we honor 11 in this category

1436
01:02:08,789 --> 01:02:07,119
dr james a coakley jr

1437
01:02:11,190 --> 01:02:08,799
is being honored for distinguished

1438
01:02:12,390 --> 01:02:11,200

visionary service in atmospheric science

1439
01:02:15,430 --> 01:02:12,400
research

1440
01:02:18,069 --> 01:02:15,440
dr coakley is recognized worldwide as a

1441
01:02:19,990 --> 01:02:18,079
pioneering scientist and renowned

1442
01:02:21,750 --> 01:02:20,000
research has made scientific

1443
01:02:24,710 --> 01:02:21,760
contributions that have advanced the

1444
01:02:26,870 --> 01:02:24,720
understanding of the role of aerosols

1445
01:02:28,549 --> 01:02:26,880
clouds and radiation in the earth's

1446
01:02:30,549 --> 01:02:28,559
climate system

1447
01:02:32,870 --> 01:02:30,559
during his distinguished career dr

1448
01:02:35,990 --> 01:02:32,880
coakley has authored numerous papers on

1449
01:02:36,950 --> 01:02:36,000
aerosols clouds and the earth radiation

1450
01:02:38,470 --> 01:02:36,960
budget

1451
01:02:39,910 --> 01:02:38,480
with regard to how they affect our

1452
01:02:41,829 --> 01:02:39,920
climate

1453
01:02:44,309 --> 01:02:41,839
he is currently a professor of

1454
01:02:46,789 --> 01:02:44,319
atmospheric sciences sciences at oregon

1455
01:03:05,670 --> 01:02:46,799
state university and conducts research

1456
01:03:09,510 --> 01:03:07,910
dr john gregory

1457
01:03:11,589 --> 01:03:09,520
is being honored for sustained and

1458
01:03:13,750 --> 01:03:11,599
exceptional leadership in integrating

1459
01:03:15,990 --> 01:03:13,760
research and education

1460
01:03:17,750 --> 01:03:16,000
in space science and engineering over

1461
01:03:20,150 --> 01:03:17,760
several decades

1462
01:03:22,789 --> 01:03:20,160
dr gregory has coupled a passion for

1463
01:03:24,710 --> 01:03:22,799

education with his own noteworthy high

1464
01:03:26,950 --> 01:03:24,720
energy astrophysics and space

1465
01:03:29,190 --> 01:03:26,960
environmental effects research and

1466
01:03:33,829 --> 01:03:29,200
development experience to innovatively

1467
01:03:35,910 --> 01:03:33,839
launch design build fly and analyze this

1468
01:03:38,309 --> 01:03:35,920
portfolio programs uses the national

1469
01:03:41,029 --> 01:03:38,319
space grant college network for students

1470
01:03:42,470 --> 01:03:41,039
to design and build flight hardware on

1471
01:03:44,470 --> 01:03:42,480
their own initiative

1472
01:03:46,950 --> 01:03:44,480
these highly successful programs have

1473
01:03:48,150 --> 01:03:46,960
touched thousands of students in all 50

1474
01:03:50,470 --> 01:03:48,160
states

1475
01:03:53,109 --> 01:03:50,480
he has established the nasa academy in

1476
01:03:55,829 --> 01:03:53,119
1994 which has expanded to include

1477
01:03:58,150 --> 01:03:55,839
robotics and propulsion

1478
01:04:00,789 --> 01:03:58,160
and he has provided intensive research

1479
01:04:03,349 --> 01:04:00,799
experiences to hundreds of students many

1480
01:04:05,829 --> 01:04:03,359
of whom decide on careers with nasa

1481
01:04:08,870 --> 01:04:05,839
for the past 22 years he has directed

1482
01:04:11,190 --> 01:04:08,880
the nasa alabama space grant consortium

1483
01:04:13,109 --> 01:04:11,200
that includes all research universities

1484
01:04:14,309 --> 01:04:13,119
in the state plus several community

1485
01:04:16,150 --> 01:04:14,319
colleges

1486
01:04:18,150 --> 01:04:16,160
and the nasa alabama experimental

1487
01:04:19,270 --> 01:04:18,160
program to stimulate competitive

1488
01:04:31,990 --> 01:04:19,280

research

1489
01:04:36,470 --> 01:04:34,870
mr thomas hancock

1490
01:04:38,390 --> 01:04:36,480
is being honored for exceptional

1491
01:04:40,230 --> 01:04:38,400
dedication and professionalism in

1492
01:04:42,069 --> 01:04:40,240
sharing nasa aerospace education

1493
01:04:44,309 --> 01:04:42,079
opportunities with students and

1494
01:04:47,029 --> 01:04:44,319
educators around the world

1495
01:04:49,029 --> 01:04:47,039
mr hancock has had a notable career of

1496
01:04:50,470 --> 01:04:49,039
33 years

1497
01:04:51,910 --> 01:04:50,480
through his role with the american

1498
01:04:54,470 --> 01:04:51,920
institute of aeronautics and

1499
01:04:56,309 --> 01:04:54,480
astronautics or aia mr hancock's

1500
01:04:58,470 --> 01:04:56,319
distinguished service technical

1501
01:05:00,069 --> 01:04:58,480
credibility and vision have provided

1502
01:05:02,309 --> 01:05:00,079
exceptional leadership

1503
01:05:04,950 --> 01:05:02,319
in support of the nasa's office of human

1504
01:05:08,549 --> 01:05:04,960
capital academic affairs office

1505
01:05:10,390 --> 01:05:08,559
through aia programs and numerous others

1506
01:05:12,549 --> 01:05:10,400
he has engaged multiple generations of

1507
01:05:14,950 --> 01:05:12,559
aerospace engineers beginning with the

1508
01:05:17,190 --> 01:05:14,960
science technology engineering and

1509
01:05:20,230 --> 01:05:17,200
mathematics learning opportunities for

1510
01:05:22,630 --> 01:05:20,240
k-12 students by providing the tools and

1511
01:05:24,549 --> 01:05:22,640
resources necessary for educators and

1512
01:05:27,190 --> 01:05:24,559
students to take their understanding of

1513
01:05:29,510 --> 01:05:27,200

aerospace to the next level

1514
01:05:30,309 --> 01:05:29,520
mr hancock demonstrates just a little

1515
01:05:32,470 --> 01:05:30,319
more

1516
01:05:34,309 --> 01:05:32,480
mr hancock demonstrates a level of

1517
01:05:36,069 --> 01:05:34,319
aerospace and aeronautics excellence

1518
01:05:38,230 --> 01:05:36,079
that has made a profound and indelible

1519
01:05:46,549 --> 01:05:38,240
impact on nasa's education mission

1520
01:05:50,630 --> 01:05:49,109
dr bruce m jakoski

1521
01:05:53,270 --> 01:05:50,640
is being honored for dedicated

1522
01:05:56,309 --> 01:05:53,280
commitment and numerous contributions to

1523
01:05:59,109 --> 01:05:56,319
nasa mars missions especially the maven

1524
01:06:01,109 --> 01:05:59,119
project benefiting nasa and the world

1525
01:06:03,190 --> 01:06:01,119
dr jakovsky of the university of

1526
01:06:05,670 --> 01:06:03,200
colorado's laboratory for atmospheric

1527
01:06:07,829 --> 01:06:05,680
and space physics has long and

1528
01:06:09,829 --> 01:06:07,839
distinguished career working on mars

1529
01:06:11,589 --> 01:06:09,839
missions since the viking missions in

1530
01:06:13,190 --> 01:06:11,599
the 1970s

1531
01:06:15,750 --> 01:06:13,200
and it continues to make extraordinary

1532
01:06:18,870 --> 01:06:15,760
contributions to nasa's mission with the

1533
01:06:20,390 --> 01:06:18,880
mars atmosphere in volatile evolution or

1534
01:06:22,470 --> 01:06:20,400
maven mission

1535
01:06:24,789 --> 01:06:22,480
with maven he has set out on a journey

1536
01:06:26,710 --> 01:06:24,799
to understand the role that the loss of

1537
01:06:28,950 --> 01:06:26,720
atmosphere to space has played on the

1538
01:06:31,349 --> 01:06:28,960

climate change that is inferred to have

1539
01:06:33,990 --> 01:06:31,359
incurred over time on mars

1540
01:06:35,510 --> 01:06:34,000
as a principal investigator dr jakovsky

1541
01:06:37,270 --> 01:06:35,520
has full responsibility for the

1542
01:06:39,750 --> 01:06:37,280
performance of the mission which was

1543
01:06:41,349 --> 01:06:39,760
launched in november 2013

1544
01:06:43,589 --> 01:06:41,359
and the world awaits the scientific

1545
01:06:46,230 --> 01:06:43,599
discoveries that naven is probably

1546
01:06:48,470 --> 01:06:46,240
poised to deliver upon arrival at mars

1547
01:06:50,549 --> 01:06:48,480
in september 2014.

1548
01:06:52,549 --> 01:06:50,559
his leadership and the delivery of the

1549
01:06:54,870 --> 01:06:52,559
launch of the maven mission with full

1550
01:06:57,349 --> 01:06:54,880
technical capability affirmed all

1551
01:07:07,670 --> 01:06:57,359
public's confidence in nasa and set a

1552
01:07:13,670 --> 01:07:11,270
dr hans j koenigsmann is being honored

1553
01:07:15,910 --> 01:07:13,680
for exceptional success in developing

1554
01:07:17,750 --> 01:07:15,920
commercial resupply services to the

1555
01:07:19,910 --> 01:07:17,760
international space station

1556
01:07:22,069 --> 01:07:19,920
dr koenigsmann has demonstrated

1557
01:07:24,230 --> 01:07:22,079
exceptional leadership and ingenuity as

1558
01:07:26,390 --> 01:07:24,240
the vice president of mission assurance

1559
01:07:29,270 --> 01:07:26,400
as well as serving as the launch vehicle

1560
01:07:31,670 --> 01:07:29,280
chief engineer for spacex

1561
01:07:34,549 --> 01:07:31,680
specifically he was instrumental in the

1562
01:07:37,190 --> 01:07:34,559
ground up development of spacex a new

1563
01:07:39,270 --> 01:07:37,200

commercial launch capability to resupply

1564
01:07:42,230 --> 01:07:39,280
and return critical cargo to the

1565
01:07:44,309 --> 01:07:42,240
international space station or iss his

1566
01:07:46,549 --> 01:07:44,319
unique skills and open customer

1567
01:07:47,990 --> 01:07:46,559
relationships provide the continuity

1568
01:07:50,069 --> 01:07:48,000
needed to ensure timely and

1569
01:07:52,549 --> 01:07:50,079
cost-effective launch services during

1570
01:07:54,470 --> 01:07:52,559
these times of change and anomaly

1571
01:07:56,549 --> 01:07:54,480
his commitment to understanding

1572
01:07:58,309 --> 01:07:56,559
resolving and coordinating

1573
01:08:00,390 --> 01:07:58,319
with nasa is key

1574
01:08:03,589 --> 01:08:00,400
and because of his experience

1575
01:08:05,990 --> 01:08:03,599
knowledge expertise insightfulness and

1576
01:08:08,150 --> 01:08:06,000
leadership spacex is capable of

1577
01:08:17,269 --> 01:08:08,160
supplying commercial resupply services

1578
01:08:21,189 --> 01:08:19,349
dr mason peck

1579
01:08:23,829 --> 01:08:21,199
is being honored for outstanding

1580
01:08:26,630 --> 01:08:23,839
leadership of nasa technology policy and

1581
01:08:29,669 --> 01:08:26,640
advocacy for technology development

1582
01:08:32,070 --> 01:08:29,679
to deliver innovative solutions for nasa

1583
01:08:33,430 --> 01:08:32,080
missions and the significant national

1584
01:08:35,269 --> 01:08:33,440
needs

1585
01:08:37,430 --> 01:08:35,279
with a broad background in aerospace

1586
01:08:39,910 --> 01:08:37,440
technology and nearly 20 years of

1587
01:08:42,470 --> 01:08:39,920
experience in industry and academia dr

1588
01:08:44,870 --> 01:08:42,480

peck infused cutting-edge technological

1589
01:08:47,590 --> 01:08:44,880
innovations during his two-year service

1590
01:08:49,030 --> 01:08:47,600
as nasa's chief technologist

1591
01:08:50,709 --> 01:08:49,040
serving the agency through the

1592
01:08:53,910 --> 01:08:50,719
intergovernmental agreement with cornell

1593
01:08:55,910 --> 01:08:53,920
university he documented demonstrated

1594
01:08:58,229 --> 01:08:55,920
and communicated the societal impact of

1595
01:08:59,910 --> 01:08:58,239
nasa's technology investments and led

1596
01:09:01,910 --> 01:08:59,920
technology transfer and

1597
01:09:03,990 --> 01:09:01,920
commercialization efforts

1598
01:09:05,990 --> 01:09:04,000
over the years dr peck worked with nasa

1599
01:09:08,149 --> 01:09:06,000
as an engineer on a variety of

1600
01:09:10,149 --> 01:09:08,159
technology programs served as a

1601
01:09:13,269 --> 01:09:10,159
consultant with private industry and

1602
01:09:17,189 --> 01:09:13,279
authored 90 academic articles

1603
01:09:19,510 --> 01:09:17,199
holding 17 u.s and european patents he

1604
01:09:21,669 --> 01:09:19,520
infused creativity into nasa missions

1605
01:09:23,910 --> 01:09:21,679
which benefited not only space

1606
01:09:32,829 --> 01:09:23,920
technology programs but the day-to-day

1607
01:09:38,149 --> 01:09:35,829
americans mr thomas pearson

1608
01:09:40,229 --> 01:09:38,159
who is being recognized posthumously

1609
01:09:42,470 --> 01:09:40,239
today is being honored for distinguished

1610
01:09:44,550 --> 01:09:42,480
service to nasa and the scientific

1611
01:09:47,030 --> 01:09:44,560
community through the leadership of the

1612
01:09:48,870 --> 01:09:47,040
seti institute supporting basic research

1613
01:09:49,990 --> 01:09:48,880

and education dealing with life in the

1614
01:09:52,229 --> 01:09:50,000
universe

1615
01:09:54,470 --> 01:09:52,239
mr pearson was the founder and chief

1616
01:09:57,270 --> 01:09:54,480
executive officer of the search for

1617
01:09:58,550 --> 01:09:57,280
extraterrestrial intelligence institute

1618
01:10:01,030 --> 01:09:58,560
a basic

1619
01:10:04,070 --> 01:10:01,040
research organization that supports nasa

1620
01:10:06,470 --> 01:10:04,080
research programs in astronomy planetary

1621
01:10:09,510 --> 01:10:06,480
science and astrobiology

1622
01:10:11,750 --> 01:10:09,520
founded in 1984 the private nonprofit

1623
01:10:14,229 --> 01:10:11,760
organization has cooperated closely with

1624
01:10:17,189 --> 01:10:14,239
nasa ames research center

1625
01:10:18,550 --> 01:10:17,199
in basic research education and mission

1626
01:10:20,310 --> 01:10:18,560
operations

1627
01:10:22,070 --> 01:10:20,320
mr pearson was instrumental in

1628
01:10:24,870 --> 01:10:22,080
recruiting world-renowned scientists and

1629
01:10:28,070 --> 01:10:24,880
engineers and under his direction the

1630
01:10:31,350 --> 01:10:28,080
institute administered over 275

1631
01:10:33,430 --> 01:10:31,360
million dollars total in funded research

1632
01:10:36,229 --> 01:10:33,440
mr pearson's legacy will live on in the

1633
01:10:39,189 --> 01:10:36,239
institute which hosts the rings node for

1634
01:10:41,110 --> 01:10:39,199
nasa's planetary data system and has a

1635
01:10:43,750 --> 01:10:41,120
lead education role for the

1636
01:10:54,149 --> 01:10:43,760
stratospheric observatory for infrared

1637
01:10:58,470 --> 01:10:56,550
mr matthew n ramsey

1638
01:11:01,110 --> 01:10:58,480

is being honored for commitment

1639
01:11:03,430 --> 01:11:01,120
diligence and superior service in the

1640
01:11:06,149 --> 01:11:03,440
planning and execution of space launch

1641
01:11:08,149 --> 01:11:06,159
systems design analysis cycle and

1642
01:11:10,149 --> 01:11:08,159
configuration management

1643
01:11:12,310 --> 01:11:10,159
mr ramsey's overall service and

1644
01:11:14,790 --> 01:11:12,320
contribution to nasa programs and

1645
01:11:17,030 --> 01:11:14,800
projects have profoundly impacted the

1646
01:11:19,189 --> 01:11:17,040
success of the nasa mission

1647
01:11:20,950 --> 01:11:19,199
he has displayed exceptional quality

1648
01:11:23,350 --> 01:11:20,960
tireless service

1649
01:11:25,910 --> 01:11:23,360
and innovative vision as the space

1650
01:11:27,830 --> 01:11:25,920
launch system or sls program advances

1651
01:11:30,709 --> 01:11:27,840
throughout the seas the spacecraft

1652
01:11:33,990 --> 01:11:30,719
vehicle program life cycle

1653
01:11:37,189 --> 01:11:34,000
he determined the design analysis cycle

1654
01:11:40,070 --> 01:11:37,199
or dac execution strategy for sls and

1655
01:11:42,470 --> 01:11:40,080
set strategies for timing of vehicle and

1656
01:11:44,550 --> 01:11:42,480
element analysis cycles to ensure all

1657
01:11:46,310 --> 01:11:44,560
were defined and available

1658
01:11:48,550 --> 01:11:46,320
without his leadership in this critical

1659
01:11:50,550 --> 01:11:48,560
area it is unlikely that the program

1660
01:11:52,950 --> 01:11:50,560
would have advanced on schedule

1661
01:11:55,430 --> 01:11:52,960
mr ramsey's appreciable contributions to

1662
01:11:57,830 --> 01:11:55,440
sls continue to have a significant

1663
01:11:59,510 --> 01:11:57,840

influence on the program's ability to

1664
01:12:02,390 --> 01:11:59,520
successfully meet stakeholder

1665
01:12:11,270 --> 01:12:02,400
requirements affordability objectives

1666
01:12:16,149 --> 01:12:13,910
mr william shatner who could not be with

1667
01:12:18,470 --> 01:12:16,159
us here today is being honored for

1668
01:12:20,870 --> 01:12:18,480
outstanding generosity

1669
01:12:22,790 --> 01:12:20,880
education and dedication to inspiring

1670
01:12:25,750 --> 01:12:22,800
new generations of explorers around the

1671
01:12:27,750 --> 01:12:25,760
world and unwavering support for nasa

1672
01:12:30,390 --> 01:12:27,760
and its missions of discovery

1673
01:12:33,430 --> 01:12:30,400
a lifelong advocate of space exploration

1674
01:12:35,270 --> 01:12:33,440
and nasa mr strattner's long-standing

1675
01:12:38,149 --> 01:12:35,280
relationship with nasa dates back to his

1676
01:12:40,229 --> 01:12:38,159
portrayal of captain james t curt in the

1677
01:12:41,910 --> 01:12:40,239
star trek series in films

1678
01:12:45,110 --> 01:12:41,920
it continued with visible public

1679
01:12:46,470 --> 01:12:45,120
outreach efforts in 1979 surrounding the

1680
01:12:49,189 --> 01:12:46,480
introduction of the space shuttle

1681
01:12:51,430 --> 01:12:49,199
prototype and endures today

1682
01:12:54,229 --> 01:12:51,440
most recently he donated his valuable

1683
01:12:56,550 --> 01:12:54,239
time and vocal skills to narrate a nasa

1684
01:12:58,709 --> 01:12:56,560
documentary celebrating the 30th

1685
01:13:00,229 --> 01:12:58,719
anniversary of the space shuttle program

1686
01:13:02,630 --> 01:13:00,239
and honored the final flight of the

1687
01:13:05,270 --> 01:13:02,640
shuttle by recreating his famous

1688
01:13:08,390 --> 01:13:05,280

television introduction as the last wake

1689
01:13:10,550 --> 01:13:08,400
up call for sts-133

1690
01:13:13,110 --> 01:13:10,560
he often uses his twitter account and

1691
01:13:15,510 --> 01:13:13,120
his nearly 2 million followers to

1692
01:13:17,830 --> 01:13:15,520
interact directly with nasa voicing his

1693
01:13:26,550 --> 01:13:17,840
support for the latest agency news and

1694
01:13:30,870 --> 01:13:29,189
dr edward c stone who also could not be

1695
01:13:32,709 --> 01:13:30,880
with us here today is being honored for

1696
01:13:34,790 --> 01:13:32,719
a lifetime of extraordinary scientific

1697
01:13:37,189 --> 01:13:34,800
achievement and outstanding leadership

1698
01:13:39,750 --> 01:13:37,199
of space science missions as well as his

1699
01:13:41,590 --> 01:13:39,760
exemplary sharing of the exciting

1700
01:13:43,669 --> 01:13:41,600
results with the public

1701
01:13:45,189 --> 01:13:43,679
an internationally known physicist and

1702
01:13:48,229 --> 01:13:45,199
california institute of technology

1703
01:13:50,669 --> 01:13:48,239
professor dr stone has served as project

1704
01:13:53,030 --> 01:13:50,679
scientist for the voyager program from

1705
01:13:55,270 --> 01:13:53,040
1972 to the present

1706
01:13:59,189 --> 01:13:55,280
the voyager 1 spacecraft launched in

1707
01:14:01,669 --> 01:13:59,199
1977 and now is more than 11 billion

1708
01:14:03,350 --> 01:14:01,679
miles from earth it recently became the

1709
01:14:05,030 --> 01:14:03,360
first man-made object to enter

1710
01:14:07,189 --> 01:14:05,040
interstellar space

1711
01:14:09,350 --> 01:14:07,199
dr stone's leadership of this mission as

1712
01:14:11,990 --> 01:14:09,360
well as his numerous contributions to

1713
01:14:13,830 --> 01:14:12,000

both earth and space science make him

1714
01:14:15,430 --> 01:14:13,840
fully deserving of nasa's highest

1715
01:14:17,110 --> 01:14:15,440
civilian honor

1716
01:14:19,430 --> 01:14:17,120
highlights of his decades of leadership

1717
01:14:20,870 --> 01:14:19,440
include galileo's five-year orbital

1718
01:14:23,350 --> 01:14:20,880
mission to jupiter

1719
01:14:24,310 --> 01:14:23,360
the launch of the cassini spacecraft to

1720
01:14:26,229 --> 01:14:24,320
saturn

1721
01:14:28,550 --> 01:14:26,239
and the launch of the mars global

1722
01:14:30,709 --> 01:14:28,560
surveyor and a new generation of earth

1723
01:14:32,790 --> 01:14:30,719
science satellites as well as a

1724
01:14:41,990 --> 01:14:32,800
successful mars pathfinder landing in

1725
01:14:46,550 --> 01:14:44,870
our final honoree today is mr patrick

1726
01:14:51,510 --> 01:14:46,560
wiggins

1727
01:14:54,390 --> 01:14:51,520
individual dedication to community and

1728
01:14:56,550 --> 01:14:54,400
scientific engagement at nasa's prolific

1729
01:14:58,870 --> 01:14:56,560
solar system ambassador

1730
01:15:01,750 --> 01:14:58,880
mr wiggins joined the nasa solar systems

1731
01:15:04,550 --> 01:15:01,760
ambassador or ssa program in january

1732
01:15:07,510 --> 01:15:04,560
2002 shortly before retiring from the

1733
01:15:10,070 --> 01:15:07,520
hansen planetarium following 26 years of

1734
01:15:13,350 --> 01:15:10,080
service over the past 12 years he has

1735
01:15:16,229 --> 01:15:13,360
conducted over 1050 events

1736
01:15:17,910 --> 01:15:16,239
averaging 88 events per year well over

1737
01:15:19,590 --> 01:15:17,920
the four events per year that are asked

1738
01:15:21,910 --> 01:15:19,600

of volunteers

1739
01:15:24,470 --> 01:15:21,920
with a background in astronomy and a

1740
01:15:26,790 --> 01:15:24,480
solid reputation for public engagement

1741
01:15:29,189 --> 01:15:26,800
mr wiggins tirelessly travels across the

1742
01:15:31,750 --> 01:15:29,199
state of utah performing outreach

1743
01:15:34,229 --> 01:15:31,760
giving educational talks to students and

1744
01:15:37,590 --> 01:15:34,239
regularly provides updates on nasa's

1745
01:15:39,669 --> 01:15:37,600
space exploratory efforts to local media

1746
01:15:42,149 --> 01:15:39,679
his superior dedication and volunteer

1747
01:15:44,790 --> 01:15:42,159
efforts have built a positive reputation

1748
01:15:55,990 --> 01:15:44,800
for not only the ssa program but also

1749
01:15:58,870 --> 01:15:57,270
let's give all of our distinguished

1750
01:16:11,430 --> 01:15:58,880
honorees another round of applause for

1751
01:16:15,350 --> 01:16:13,110
i would also like to extend our special

1752
01:16:17,990 --> 01:16:15,360
appreciation to mr boland mr lightfoot

1753
01:16:19,910 --> 01:16:18,000
and mr buruki the military district of

1754
01:16:20,709 --> 01:16:19,920
washington's joint armed forces color

1755
01:16:22,630 --> 01:16:20,719
guard

1756
01:16:24,390 --> 01:16:22,640
especially miss thomas

1757
01:16:26,229 --> 01:16:24,400
and the ceremony volunteers for their

1758
01:16:35,910 --> 01:16:26,239
contributions in making today's ceremony

1759
01:16:39,510 --> 01:16:38,070
the nasa agency honor awards program

1760
01:16:41,990 --> 01:16:39,520
would not have been made possible

1761
01:16:43,910 --> 01:16:42,000
without the dedication and contributions

1762
01:16:44,950 --> 01:16:43,920
of the incentive awards board expert

1763
01:16:47,590 --> 01:16:44,960

panels

1764
01:16:49,030 --> 01:16:47,600
center review boards and the nasa awards

1765
01:16:51,110 --> 01:16:49,040
community

1766
01:16:53,270 --> 01:16:51,120
the agency also wishes to recognize our

1767
01:16:55,350 --> 01:16:53,280
special guests representatives from the

1768
01:16:58,870 --> 01:16:55,360
smithsonian national air and space

1769
01:17:00,390 --> 01:16:58,880
museum and the nasa office of education

1770
01:17:02,550 --> 01:17:00,400
as well as stem students from the

1771
01:17:04,310 --> 01:17:02,560
mckinley tech high school

1772
01:17:05,590 --> 01:17:04,320
central high school in prince george's

1773
01:17:07,910 --> 01:17:05,600
county

1774
01:17:10,310 --> 01:17:07,920
and anacostia high school

1775
01:17:12,390 --> 01:17:10,320
and the nasa stem ambassadors

1776
01:17:14,550 --> 01:17:12,400
may you continue to strive to reach new

1777
01:17:16,550 --> 01:17:14,560
heights and inspire future generations

1778
01:17:18,950 --> 01:17:16,560
of space explorers

1779
01:17:20,870 --> 01:17:18,960
to the extraordinary honorees we thank

1780
01:17:23,110 --> 01:17:20,880
you for participating in today's event

1781
01:17:24,870 --> 01:17:23,120
and we wish you much continued success