



1  
00:00:03,300 --> 00:00:08,379

[Music]

2  
00:00:16,670 --> 00:00:14,060  
about tonight is global warming and you

3  
00:00:20,210 --> 00:00:16,680  
hopefully all heard the morning session

4  
00:00:25,099 --> 00:00:20,220  
where the positions of several of our

5  
00:00:28,359 --> 00:00:25,109  
panelists were put forward you know

6  
00:00:33,319 --> 00:00:28,369  
david dilly who is a meteorologist and

7  
00:00:36,440 --> 00:00:33,329  
peter tans from Noah Gifford Miller from

8  
00:00:38,420 --> 00:00:36,450  
the University of Colorado and Henry

9  
00:00:43,850 --> 00:00:38,430  
Bauer from Virginia Tech and apparently

10  
00:00:48,049 --> 00:00:43,860  
a professional panelist I'm an

11  
00:00:50,660 --> 00:00:48,059  
astronomer and astronomers interest in

12  
00:00:52,700 --> 00:00:50,670  
weather has mainly to do I'm an optical

13  
00:00:56,569 --> 00:00:52,710

astronomer whether it's cloudy or not

14

00:00:58,040 --> 00:00:56,579

cloudy so I'm not really I don't have a

15

00:01:02,060 --> 00:00:58,050

big strong position on global warming

16

00:01:04,570 --> 00:01:02,070

one way or the other I will say this I

17

00:01:08,630 --> 00:01:04,580

spent some time in the Netherlands and

18

00:01:12,080 --> 00:01:08,640

we came back to the States in 1967 and I

19

00:01:13,460 --> 00:01:12,090

can remember listening to I've never

20

00:01:17,780 --> 00:01:13,470

been able to remember whether it was the

21

00:01:19,999 --> 00:01:17,790

Today Show or Johnny Carson but he had

22

00:01:23,120 --> 00:01:20,009

Robert Jastrow who was a famous

23

00:01:26,179 --> 00:01:23,130

astronomer of the day on and jestro was

24

00:01:30,260 --> 00:01:26,189

telling us that we were entering the

25

00:01:32,510 --> 00:01:30,270

next Ice Age and here we are 30 years

26

00:01:36,289 --> 00:01:32,520

later and we're having a discussion

27

00:01:39,170 --> 00:01:36,299

about whether we're going to warm

28

00:01:41,240 --> 00:01:39,180

ourselves to death so to speak so in any

29

00:01:44,960 --> 00:01:41,250

case this is an issue that has come up

30

00:01:47,120 --> 00:01:44,970

and it's fairly active right now I'm

31

00:01:49,850 --> 00:01:47,130

going to ask each of the panelists to

32

00:01:52,190 --> 00:01:49,860

sort of review their positions for about

33

00:01:54,050 --> 00:01:52,200

five minutes each and then there will be

34

00:01:56,179 --> 00:01:54,060

some time for the panelists to question

35

00:01:58,530 --> 00:01:56,189

each other a little bit and then we'll

36

00:02:00,570 --> 00:01:58,540

open it to the floor for the rest

37

00:02:02,730 --> 00:02:00,580

I'm going to start with Henry Bauer

38

00:02:04,890 --> 00:02:02,740

because he is the one panelist that

39

00:02:07,020 --> 00:02:04,900

didn't speak this morning so we need to

40

00:02:09,090 --> 00:02:07,030

here has what his feelings are about it

41

00:02:10,440 --> 00:02:09,100

and then we will move I guess just down

42

00:02:13,860 --> 00:02:10,450

the line

43

00:02:16,560 --> 00:02:13,870

letting the panelists speak so Henry yes

44

00:02:20,190 --> 00:02:16,570

and our perspectives are also very

45

00:02:24,540 --> 00:02:20,200

different to of the speakers this

46

00:02:28,040 --> 00:02:24,550

morning are actively engaged directly in

47

00:02:31,940 --> 00:02:28,050

research using the mainstream paradigm

48

00:02:36,930 --> 00:02:31,950

David ill he really has been conducting

49

00:02:41,130 --> 00:02:36,940

meta-analysis of an enormous amount of

50

00:02:43,470 --> 00:02:41,140

data and my perspective is from science

51  
00:02:47,430 --> 00:02:43,480  
studies history and sociology of science

52  
00:02:53,270 --> 00:02:47,440  
and one of the things that history

53  
00:02:58,320 --> 00:02:53,280  
teaches is that the mainstream view on a

54  
00:03:02,280 --> 00:02:58,330  
scientific issue is very often too sure

55  
00:03:08,040 --> 00:03:02,290  
of itself when you're doing research

56  
00:03:11,940 --> 00:03:08,050  
that's perfectly okay but if what the

57  
00:03:17,100 --> 00:03:11,950  
researchers say is going to be a basis

58  
00:03:20,810 --> 00:03:17,110  
for public action then the criterion of

59  
00:03:26,220 --> 00:03:20,820  
certainty has to be rather different and

60  
00:03:29,150 --> 00:03:26,230  
what is always forgotten is that there's

61  
00:03:32,520 --> 00:03:29,160  
something called the unknown unknown

62  
00:03:36,690 --> 00:03:32,530  
there are things which it is simply

63  
00:03:39,600 --> 00:03:36,700

impossible to foresee or to imagine at

64

00:03:43,770 --> 00:03:39,610

any given time and those are the things

65

00:03:49,140 --> 00:03:43,780

that periodically pop out at us and make

66

00:03:52,289 --> 00:03:49,150

us change our point of view now global

67

00:03:55,320 --> 00:03:52,299

warming is not a matter of research if

68

00:03:57,930 --> 00:03:55,330

it were we wouldn't have a session like

69

00:04:00,509 --> 00:03:57,940

this and we wouldn't have international

70

00:04:04,590 --> 00:04:00,519

panels and we wouldn't have governments

71

00:04:09,300 --> 00:04:04,600

talking about it global warming is of

72

00:04:10,950 --> 00:04:09,310

concern because there are proposals that

73

00:04:13,730 --> 00:04:10,960

will saddle

74

00:04:17,190 --> 00:04:13,740

every country in the world with enormous

75

00:04:21,390 --> 00:04:17,200

burdens of changing ways in which

76

00:04:30,000 --> 00:04:21,400

they're doing things and the involved

77

00:04:34,440 --> 00:04:30,010

costs because it is being said that it

78

00:04:40,080 --> 00:04:34,450

is 100 percent certain that emission of

79

00:04:43,310 --> 00:04:40,090

co2 is producing is adding to the global

80

00:04:48,450 --> 00:04:43,320

warming in a way that is so dangerous

81

00:04:53,550 --> 00:04:48,460

that we must do something about it leads

82

00:04:58,590 --> 00:04:53,560

to a continual bombardment of statements

83

00:05:05,520 --> 00:04:58,600

like this global warming will propose an

84

00:05:09,380 --> 00:05:05,530

asthma threat Daily Telegraph 2004 flood

85

00:05:12,360 --> 00:05:09,390

risk will double in 50 years

86

00:05:15,420 --> 00:05:12,370

global warming will leave 2 billion

87

00:05:21,300 --> 00:05:15,430

people worldwide vulnerable to

88

00:05:26,250 --> 00:05:21,310

catastrophic flooding by 2050 our Energy

89

00:05:29,430 --> 00:05:26,260

Secretary Steven Chu said California's

90

00:05:32,520 --> 00:05:29,440

farms and vineyards could vanish by the

91

00:05:34,560 --> 00:05:32,530

end of the century and its major cities

92

00:05:37,680 --> 00:05:34,570

could be in jeopardy

93

00:05:41,490 --> 00:05:37,690

if Americans do not act to slow the

94

00:05:46,040 --> 00:05:41,500

advance of global warming and so on

95

00:05:49,620 --> 00:05:46,050

you've been exposed to these things I

96

00:05:54,120 --> 00:05:49,630

don't believe it is the proper role of

97

00:05:56,940 --> 00:05:54,130

science to tell policymakers we are a

98

00:05:58,800 --> 00:05:56,950

hundred percent certain about something

99

00:06:02,640 --> 00:05:58,810

like this

100

00:06:05,760 --> 00:06:02,650

Roger pinky who is also at the

101

00:06:08,430 --> 00:06:05,770

University of Colorado has written a

102

00:06:10,620 --> 00:06:08,440

book called the honest broker in which

103

00:06:14,820 --> 00:06:10,630

he points out that the proper role of

104

00:06:19,110 --> 00:06:14,830

science and of scientists is to tell

105

00:06:22,719 --> 00:06:19,120

policy makers what is the best evidence

106

00:06:29,559 --> 00:06:22,729

on any particular issue

107

00:06:33,209 --> 00:06:29,569

which means including what competent

108

00:06:38,769 --> 00:06:33,219

experts say who may happen to disagree

109

00:06:41,369 --> 00:06:38,779

with the mainstream consensus one of my

110

00:06:44,920 --> 00:06:41,379

reasons for being skeptical that

111

00:06:48,790 --> 00:06:44,930

human-caused global warming is a hundred

112

00:06:52,239 --> 00:06:48,800

percent certain is that we were told it

113

00:06:55,360 --> 00:06:52,249

was certain twenty five years ago or

114

00:06:59,679 --> 00:06:55,370

more at a time when that could not

115

00:07:02,369 --> 00:06:59,689

possibly have been known in the light of

116

00:07:06,730 --> 00:07:02,379

what we've learned since then

117

00:07:09,339 --> 00:07:06,740

Frederick Seitz who was a physicist

118

00:07:12,999 --> 00:07:09,349

recipient of the National Medal of

119

00:07:17,070 --> 00:07:13,009

Freedom and a one-time president of the

120

00:07:19,299 --> 00:07:17,080

National Academy said about the

121

00:07:23,260 --> 00:07:19,309

International Panel on Climate Change

122

00:07:26,589 --> 00:07:23,270

report the report is not what it appears

123

00:07:29,889 --> 00:07:26,599

to be it's not the version that was

124

00:07:34,119 --> 00:07:29,899

approved by the contributing scientists

125

00:07:38,619 --> 00:07:34,129

listed on the title page what they said

126  
00:07:41,320 --> 00:07:38,629  
was none of the studies cited above has

127  
00:07:44,050 --> 00:07:41,330  
shown clear evidence that we can

128  
00:07:47,230 --> 00:07:44,060  
attribute observed changes to the

129  
00:07:52,449 --> 00:07:47,240  
specific cause of increase in greenhouse

130  
00:07:56,649 --> 00:07:52,459  
gases no study to date has positively

131  
00:08:01,540 --> 00:07:56,659  
attributed all or part of the change to

132  
00:08:05,049 --> 00:08:01,550  
anthropogenic man-made causes any claims

133  
00:08:08,170 --> 00:08:05,059  
of positive detection of significant

134  
00:08:12,610 --> 00:08:08,180  
climate change are likely to remain

135  
00:08:16,059 --> 00:08:12,620  
controversial until uncertainties in the

136  
00:08:21,429 --> 00:08:16,069  
total natural variability of the climate

137  
00:08:25,350 --> 00:08:21,439  
system are reduced since then that was

138  
00:08:36,420 --> 00:08:32,719

what do clouds do science magazine 2009

139

00:08:47,430 --> 00:08:36,430

it's uncertain whether clouds act to

140

00:08:54,690 --> 00:08:47,440

cool or to war in 2008 in Nature

141

00:08:59,220 --> 00:08:54,700

Geoscience discovery that methane is

142

00:09:02,100 --> 00:08:59,230

being produced by plants living plants

143

00:09:07,230 --> 00:09:02,110

which hadn't been known at that up to

144

00:09:11,610 --> 00:09:07,240

that time most significant from my point

145

00:09:17,519 --> 00:09:11,620

of view is that there are thousands of

146

00:09:21,780 --> 00:09:17,529

qualified experts who disagree that the

147

00:09:24,870 --> 00:09:21,790

evidence is compelling that human

148

00:09:29,040 --> 00:09:24,880

actions are causing global warming and

149

00:09:30,920 --> 00:09:29,050

you can read their statements one of

150

00:09:36,380 --> 00:09:30,930

them is the so-called Leipzig

151  
00:09:40,139 --> 00:09:36,390  
declaration and it was signed by people

152  
00:09:43,800 --> 00:09:40,149  
qualified in meteorology and related

153  
00:09:47,519 --> 00:09:43,810  
fields who hold prominent positions at

154  
00:09:50,460 --> 00:09:47,529  
research places in Austria Australia

155  
00:09:53,220 --> 00:09:50,470  
Belgium Britain Canada the Czech

156  
00:09:56,100 --> 00:09:53,230  
Republic Germany Holland New Zealand

157  
00:10:03,689 --> 00:09:56,110  
Norway Poland Russia Sweden in the

158  
00:10:10,620 --> 00:10:03,699  
United States amongst the things that

159  
00:10:13,769 --> 00:10:10,630  
might be unknown unknowns two articles

160  
00:10:19,170 --> 00:10:13,779  
were published sometime ago showing that

161  
00:10:23,610 --> 00:10:19,180  
in deep boreholes the temperature has

162  
00:10:27,480 --> 00:10:23,620  
been rising that's not because of the

163  
00:10:30,900 --> 00:10:27,490

increase in temperatures anywhere at the

164

00:10:35,160 --> 00:10:30,910

surface it's a result of heat rising

165

00:10:38,340 --> 00:10:35,170

from inside the earth so there's one

166

00:10:40,920 --> 00:10:38,350

factor that is not being taken in

167

00:10:45,120 --> 00:10:40,930

to account but there are a bunch of

168

00:10:47,870 --> 00:10:45,130

others as well so my main point is we

169

00:10:51,380 --> 00:10:47,880

have here a situation where qualified

170

00:10:57,060 --> 00:10:51,390

experts disagree with the mainstream

171

00:11:01,980 --> 00:10:57,070

consensus policymakers however ignoring

172

00:11:10,320 --> 00:11:01,990

those and I believe that that is not a

173

00:11:12,270 --> 00:11:10,330

valid thing to do David well if you

174

00:11:16,350 --> 00:11:12,280

recall this morning I started off by

175

00:11:19,050 --> 00:11:16,360

saying about 500 years ago they thought

176

00:11:26,040 --> 00:11:19,060

the world was flat and we know where

177

00:11:29,010 --> 00:11:26,050

that went in 1972 or in 1970s NASA was

178

00:11:29,970 --> 00:11:29,020

saying going into an ice age well we

179

00:11:33,300 --> 00:11:29,980

know where that went

180

00:11:37,050 --> 00:11:33,310

two thousand four and five strong

181

00:11:39,810 --> 00:11:37,060

hurricanes but hit Florida everyone was

182

00:11:42,600 --> 00:11:39,820

saying global warming man-made global

183

00:11:44,730 --> 00:11:42,610

warming stronger hurricanes and as I

184

00:11:47,070 --> 00:11:44,740

told you this morning hurricane center

185

00:11:50,880 --> 00:11:47,080

and myself we both studied Bissell two

186

00:11:55,380 --> 00:11:50,890

cycles and we had as strong hurricanes

187

00:11:58,110 --> 00:11:55,390

back in the 1920s it's a cycle and last

188

00:12:00,570 --> 00:11:58,120

year Mississippi River flood and the big

189

00:12:02,730 --> 00:12:00,580

outbreak of tornadoes cyclical the

190

00:12:05,250 --> 00:12:02,740

tornado outbreak comes about every 60

191

00:12:08,430 --> 00:12:05,260

years Mississippi River flood I track on

192

00:12:10,410 --> 00:12:08,440

my my model comes every 20 to 23 years

193

00:12:14,400 --> 00:12:10,420

it's all cyclical everything comes

194

00:12:17,940 --> 00:12:14,410

pretty much in cycles typical global

195

00:12:21,570 --> 00:12:17,950

warming cycle comes about every 230

196

00:12:24,330 --> 00:12:21,580

years its signature is to twin

197

00:12:26,610 --> 00:12:24,340

temperature peaks of ten years the last

198

00:12:31,590 --> 00:12:26,620

one that we're going through now 1930s

199

00:12:33,690 --> 00:12:31,600

and from about 1998 to 2008 or 2010 this

200

00:12:36,060 --> 00:12:33,700

shows up on every single global warming

201  
00:12:38,310 --> 00:12:36,070  
cycle we've had five global warming

202  
00:12:43,070 --> 00:12:38,320  
cycles during past twelve hundred years

203  
00:12:45,410 --> 00:12:43,080  
and during the past half million years

204  
00:12:48,060 --> 00:12:45,420  
2,200 global warming cycles

205  
00:12:50,400 --> 00:12:48,070  
however media and everyone else seems to

206  
00:12:52,920 --> 00:12:50,410  
want to talk about one global warming

207  
00:12:59,940 --> 00:12:52,930  
cycle we have to look at the past to

208  
00:13:02,580 --> 00:12:59,950  
find out what the future is a cycle also

209  
00:13:04,260 --> 00:13:02,590  
has another cycle and at a 1500 year

210  
00:13:08,070 --> 00:13:04,270  
cycle which I didn't talk about this

211  
00:13:10,920 --> 00:13:08,080  
morning on a sinusoidal curve every

212  
00:13:15,750 --> 00:13:10,930  
1,500 years the global warming cycles

213  
00:13:18,750 --> 00:13:15,760

are warmer now and back between 600 and

214

00:13:23,840 --> 00:13:18,760

800 AD then you go back every 1,500

215

00:13:26,580 --> 00:13:23,850

years and you have the warmer cycles co2

216

00:13:28,050 --> 00:13:26,590

decreases and increases with the cycles

217

00:13:30,510 --> 00:13:28,060

especially the hundred and sixteen

218

00:13:32,520 --> 00:13:30,520

thousand year interglacial cycle and

219

00:13:35,400 --> 00:13:32,530

also as I showed this morning with the

220

00:13:40,020 --> 00:13:35,410

230 year cycle as seen in the plants

221

00:13:43,230 --> 00:13:40,030

tomahtoes co2 is a byproduct of global

222

00:13:49,770 --> 00:13:43,240

warming and it is a very good byproduct

223

00:13:52,590 --> 00:13:49,780

of global warming as I showed this

224

00:13:55,350 --> 00:13:52,600

morning the lunar solar procession which

225

00:14:00,980 --> 00:13:55,360

has gravitational pulses 47 percent

226

00:14:03,870 --> 00:14:00,990

above the normal lunar lunar phases

227

00:14:06,180 --> 00:14:03,880

comes in cycles of nine years 72 years

228

00:14:09,030 --> 00:14:06,190

230 years and a hundred and sixteen

229

00:14:11,250 --> 00:14:09,040

thousand years right on the same pulse

230

00:14:13,830 --> 00:14:11,260

as all the global warming cycles and

231

00:14:15,960 --> 00:14:13,840

also with the Arctic warm water pulse

232

00:14:18,360 --> 00:14:15,970

that comes about every nine years and

233

00:14:21,240 --> 00:14:18,370

the strongest Arctic warming pulse about

234

00:14:25,380 --> 00:14:21,250

every 72 years but twin peaks in the

235

00:14:30,200 --> 00:14:25,390

global warming cycles the global or

236

00:14:32,900 --> 00:14:30,210

global cooling will begin by 2018

237

00:14:37,560 --> 00:14:32,910

coldest part of it will be right around

238

00:14:39,480 --> 00:14:37,570

2023 to about 2040 2050 and our next

239

00:14:43,350 --> 00:14:39,490

global warming cycle will be in about

240

00:14:45,780 --> 00:14:43,360

the year 2150 the Northwest Passage

241

00:14:47,940 --> 00:14:45,790

whichever one is looking forward to four

242

00:14:51,930 --> 00:14:47,950

shorter shipping routes will be closing

243

00:14:55,230 --> 00:14:51,940

down and it will not reopen again for at

244

00:14:56,730 --> 00:14:55,240

least another 230 years and if it

245

00:14:59,400 --> 00:14:56,740

doesn't warm enough up enough at that

246

00:15:03,560 --> 00:14:59,410

time but next opening will be about a

247

00:15:10,100 --> 00:15:07,820

we're also to wrap it up I show that the

248

00:15:12,650 --> 00:15:10,110

global warming cycles when they end

249

00:15:14,570 --> 00:15:12,660

within about 20 years of the ending of

250

00:15:17,030 --> 00:15:14,580

the global warming cycle in conjunction

251  
00:15:19,510 --> 00:15:17,040  
with the strong global cooling cycles

252  
00:15:23,390 --> 00:15:19,520  
you have three to four very strong

253  
00:15:26,780 --> 00:15:23,400  
volcanoes and it is very typical to have

254  
00:15:31,700 --> 00:15:26,790  
a year of no summer with one of the

255  
00:15:43,580 --> 00:15:31,710  
volcanoes I'm glad you're making a

256  
00:15:45,440 --> 00:15:43,590  
prediction this morning I mentioned or

257  
00:15:48,650 --> 00:15:45,450  
talked about what I think are well-known

258  
00:15:49,910 --> 00:15:48,660  
facts about climate change so I'll

259  
00:15:53,060 --> 00:15:49,920  
summarize it again

260  
00:15:55,340 --> 00:15:53,070  
the first well-known fact is that we are

261  
00:15:57,380 --> 00:15:55,350  
the cause of the co2 increase there's

262  
00:15:59,180 --> 00:15:57,390  
not one piece of evidence that's five or

263  
00:16:06,490 --> 00:15:59,190

six independent pieces of evidence that

264

00:16:13,760 --> 00:16:09,650

the amount of co2 that very meeting is

265

00:16:17,360 --> 00:16:13,770

truly amazing nine and half billion tons

266

00:16:18,710 --> 00:16:17,370

metric tons of carbon per year I will

267

00:16:20,300 --> 00:16:18,720

put it in a slightly different

268

00:16:23,840 --> 00:16:20,310

perspective from what I did this morning

269

00:16:28,070 --> 00:16:23,850

and I don't have billion metric tons of

270

00:16:31,910 --> 00:16:28,080

carbon is more than the total seasonal

271

00:16:34,910 --> 00:16:31,920

net drawdown of all the bottle of the

272

00:16:38,110 --> 00:16:34,920

entire biosphere all forests all plants

273

00:16:41,600 --> 00:16:38,120

and soils in the northern hemisphere so

274

00:16:45,290 --> 00:16:41,610

the net seasonal cycle that the total

275

00:16:47,540 --> 00:16:45,300

amplitude from top to bottom corresponds

276

00:16:50,990 --> 00:16:47,550

to about five between five and six

277

00:16:54,170 --> 00:16:51,000

billion metric tons of carbon we human

278

00:17:00,050 --> 00:16:54,180

beings are putting in more into the

279

00:17:10,160 --> 00:17:06,280

the second important fact is that we

280

00:17:13,460 --> 00:17:10,170

understand how the extra co2 and other

281

00:17:17,180 --> 00:17:13,470

greenhouse gases will retain heat in the

282

00:17:19,730 --> 00:17:17,190

atmosphere and therefore physics in

283

00:17:21,290 --> 00:17:19,740

chemistry tell us I mean our

284

00:17:24,650 --> 00:17:21,300

understanding of quantum mechanics

285

00:17:28,430 --> 00:17:24,660

basically we understand how atoms and

286

00:17:30,980 --> 00:17:28,440

molecules interact with light infrared

287

00:17:33,260 --> 00:17:30,990

light visible light and that

288

00:17:38,870 --> 00:17:33,270

understanding is actually exquisitely

289

00:17:41,690 --> 00:17:38,880

good and it says that the heat a certain

290

00:17:44,090 --> 00:17:41,700

amount of heat currently 1.2 percent of

291

00:17:47,050 --> 00:17:44,100

the amount that we absorb from the Sun

292

00:17:50,570 --> 00:17:47,060

will be retained by the atmosphere

293

00:17:55,480 --> 00:17:50,580

therefore warming is inevitable and

294

00:18:04,550 --> 00:17:57,830

now on top of that we have actually

295

00:18:07,550 --> 00:18:04,560

observed warming finally but we do not

296

00:18:10,640 --> 00:18:07,560

know very well is how warm or how much

297

00:18:14,720 --> 00:18:10,650

the climate will change that is still a

298

00:18:17,990 --> 00:18:14,730

very uncertain matter because of not

299

00:18:19,910 --> 00:18:18,000

very well understood feedbacks and also

300

00:18:23,420 --> 00:18:19,920

because some of these feedbacks take

301  
00:18:25,520 --> 00:18:23,430  
decades to play out and my pessimistic

302  
00:18:27,830 --> 00:18:25,530  
projection for that is that we will

303  
00:18:31,640 --> 00:18:27,840  
eventually learn how the how the system

304  
00:18:33,950 --> 00:18:31,650  
works as it happens as we can observe

305  
00:18:35,540 --> 00:18:33,960  
these feedbacks in coming decades we

306  
00:18:40,660 --> 00:18:35,550  
will probably learn how it actually

307  
00:18:44,270 --> 00:18:40,670  
works but then it's also rather late

308  
00:18:47,690 --> 00:18:44,280  
what's the implication of this the

309  
00:18:52,160 --> 00:18:47,700  
implication is that our imprint on the

310  
00:18:54,560 --> 00:18:52,170  
earth as a human species is now so large

311  
00:18:56,360 --> 00:18:54,570  
that we are

312  
00:18:58,970 --> 00:18:56,370  
one could say we are entering a new

313  
00:19:02,510 --> 00:18:58,980

geologic era has been called the

314

00:19:06,890 --> 00:19:02,520

Anthropocene where humans really shape

315

00:19:09,140 --> 00:19:06,900

to serve the surface of the earth now a

316

00:19:12,080 --> 00:19:09,150

lot of people find that uncomfortable or

317

00:19:16,040 --> 00:19:12,090

are not cold they don't want to

318

00:19:18,260 --> 00:19:16,050

acknowledge that because it of I guess

319

00:19:21,080 --> 00:19:18,270

because of the implications because what

320

00:19:23,180 --> 00:19:21,090

it means is as soon as we realize that

321

00:19:26,750 --> 00:19:23,190

we are shaping the surface of the earth

322

00:19:28,640 --> 00:19:26,760

we are responsible we are as possible to

323

00:19:30,140 --> 00:19:28,650

what we live to occur to future

324

00:19:32,960 --> 00:19:30,150

generations our children and

325

00:19:35,090 --> 00:19:32,970

grandchildren and beyond and we have to

326  
00:19:37,020 --> 00:19:35,100  
actually assume his responsibilities and

327  
00:20:11,840 --> 00:19:37,030  
act like it

328  
00:20:17,240 --> 00:20:14,930  
that if we look in the object with a

329  
00:20:19,100 --> 00:20:17,250  
signal this is strong is because whether

330  
00:20:20,779 --> 00:20:19,110  
the planet warms the Arctic always warms

331  
00:20:22,580 --> 00:20:20,789  
more when it cools the Arctic cools more

332  
00:20:24,799 --> 00:20:22,590  
because of a strong trust the feedbacks

333  
00:20:27,470 --> 00:20:24,809  
and then we can say that warms now

334  
00:20:30,830 --> 00:20:27,480  
exceeds any warmth over the last five

335  
00:20:33,080 --> 00:20:30,840  
thousand years and with almost similar

336  
00:20:35,690 --> 00:20:33,090  
assurance in more than thirty thousand

337  
00:20:37,430 --> 00:20:35,700  
years and that exceeds any of these

338  
00:20:40,240 --> 00:20:37,440

natural cycles whether they're beating

339

00:20:42,710 --> 00:20:40,250

that scale of decades or even centuries

340

00:20:44,990 --> 00:20:42,720

230 years whatever those cycles are

341

00:20:46,880 --> 00:20:45,000

what's happening now is outside the

342

00:20:49,340 --> 00:20:46,890

range of those cycles because the warms

343

00:20:51,230 --> 00:20:49,350

now exceeds any thing that we've seen in

344

00:20:53,930 --> 00:20:51,240

at least five thousand years of probably

345

00:20:56,029 --> 00:20:53,940

several tens of thousands of players and

346

00:20:58,010 --> 00:20:56,039

that's that's basic evidence and I think

347

00:21:03,470 --> 00:20:58,020

the observational evidence always will

348

00:21:05,029 --> 00:21:03,480

chronicle models and theories co2 is is

349

00:21:07,460 --> 00:21:05,039

something we've understood for a long

350

00:21:10,270 --> 00:21:07,470

time sponte Arrhenius back in the 1800s

351  
00:21:13,159 --> 00:21:10,280  
was the giobertis to chemist worked out

352  
00:21:15,740 --> 00:21:13,169  
the basic mechanisms of co2 is

353  
00:21:17,510 --> 00:21:15,750  
greenhouse gases and America spumoni the

354  
00:21:20,330 --> 00:21:17,520  
fact that we weren't burning more fossil

355  
00:21:23,029 --> 00:21:20,340  
fuels because this was later license it

356  
00:21:24,560 --> 00:21:23,039  
was Chloe Swedish is cold up there he

357  
00:21:26,240 --> 00:21:24,570  
was saying if we could just burn any

358  
00:21:29,240 --> 00:21:26,250  
more fossil fuels the plant would warm

359  
00:21:31,490 --> 00:21:29,250  
up this isn't a new theory or a new idea

360  
00:21:34,130 --> 00:21:31,500  
this has been around for over 100 years

361  
00:21:44,960 --> 00:21:34,140  
there's no uncertainty

362  
00:21:47,210 --> 00:21:44,970  
that co2 anymore co2 increase the people

363  
00:21:49,820 --> 00:21:47,220

who spend their lives studying how the

364

00:21:52,760 --> 00:21:49,830

climate system works and willing to sign

365

00:21:56,000 --> 00:21:52,770

on that at 95% confidence the

366

00:21:58,760 --> 00:21:56,010

anthropogenic addition of co2 is warming

367

00:22:02,510 --> 00:21:58,770

the planet now if I was the CEO of

368

00:22:04,910 --> 00:22:02,520

ExxonMobil and my geophysicist told me

369

00:22:10,340 --> 00:22:04,920

they had 95% confidence there was a pool

370

00:22:12,290 --> 00:22:10,350

of oil my engineers had 95% confidence

371

00:22:15,050 --> 00:22:12,300

that schools were available extract that

372

00:22:18,080 --> 00:22:15,060

safely I would invest large sums of

373

00:22:20,890 --> 00:22:18,090

money following a 95 percent odds that

374

00:22:24,530 --> 00:22:20,900

there is a chance of an expected

375

00:22:25,850 --> 00:22:24,540

resource there so I think that 95% level

376

00:22:27,830 --> 00:22:25,860

of confidence is announced that we

377

00:22:32,180 --> 00:22:27,840

should be paid serious attention to it

378

00:22:35,060 --> 00:22:32,190

so there's there's really no longer a

379

00:22:36,710 --> 00:22:35,070

debate whether the place certainly mat

380

00:22:38,660 --> 00:22:36,720

that the plan is for me not to desert

381

00:22:43,780 --> 00:22:38,670

you and your goal in there there we

382

00:22:45,450 --> 00:22:43,790

debate should do about the discussion

383

00:22:47,610 --> 00:22:45,460

next time

384

00:22:50,250 --> 00:22:47,620

you mean next year you hold that debate

385

00:22:51,659 --> 00:22:50,260

the planets warming we're responsible

386

00:22:55,200 --> 00:22:51,669

what should we do because it's not

387

00:22:57,450 --> 00:22:55,210

obvious what the best friends are big

388

00:22:58,409 --> 00:22:57,460

steps forward there's really three

389

00:23:00,180 --> 00:22:58,419

pieces to it

390

00:23:05,700 --> 00:23:00,190

there's acknowledgement that this is an

391

00:23:09,000 --> 00:23:05,710

issue you have to have and then there's

392

00:23:10,710 --> 00:23:09,010

an adaptation computer missed our point

393

00:23:12,690 --> 00:23:10,720

this morning that the changes are going

394

00:23:16,049 --> 00:23:12,700

to come no matter what we do so we have

395

00:23:18,120 --> 00:23:16,059

to learn develop adaptation strategies

396

00:23:21,899 --> 00:23:18,130

and the other one is mitigation because

397

00:23:24,450 --> 00:23:21,909

the most serious threat to humans is not

398

00:23:26,580 --> 00:23:24,460

the warming planet the end product is

399

00:23:28,620 --> 00:23:26,590

probably something like the Pliocene for

400

00:23:31,019 --> 00:23:28,630

geology people pay attention to what's

401  
00:23:33,180 --> 00:23:31,029  
in the past it's not necessarily a worse

402  
00:23:35,460 --> 00:23:33,190  
world the thing that we have the

403  
00:23:38,730 --> 00:23:35,470  
greatest difficulty in accommodating

404  
00:23:41,100 --> 00:23:38,740  
gives abrupt changes and if we don't

405  
00:23:43,039 --> 00:23:41,110  
mitigate those forcings that we're

406  
00:23:46,230 --> 00:23:43,049  
adding the chances of there being

407  
00:23:48,960 --> 00:23:46,240  
unexpected unknown unknowns abrupt

408  
00:23:52,320 --> 00:23:48,970  
changes this simply increases so we have

409  
00:23:55,440 --> 00:23:52,330  
a responsibility to our children to

410  
00:23:58,560 --> 00:23:55,450  
mitigate what's

411  
00:24:00,990 --> 00:23:58,570  
thank you and so what I think we should

412  
00:24:01,560 --> 00:24:01,000  
do now is ask if you have questions for

413  
00:24:03,630 --> 00:24:01,570

each other

414

00:24:05,550 --> 00:24:03,640

and we'll take a few minutes for that if

415

00:24:08,520 --> 00:24:05,560

you do if you don't we all go on for the

416

00:24:11,550 --> 00:24:08,530

audience I have a comment for Henry okay

417

00:24:15,360 --> 00:24:11,560

Peter scientists never have 100%

418

00:24:19,260 --> 00:24:15,370

certainty and what the IPCC reports

419

00:24:22,650 --> 00:24:19,270

state they never state 100% they stay

420

00:24:25,320 --> 00:24:22,660

very confident confident reasonably

421

00:24:27,630 --> 00:24:25,330

governing and they have assigned numbers

422

00:24:31,740 --> 00:24:27,640

to that actually what that means high

423

00:24:34,890 --> 00:24:31,750

confidence etc it is never certain like

424

00:24:37,080 --> 00:24:34,900

gives it if physical scientists say

425

00:24:39,650 --> 00:24:37,090

that's something that are very confident

426  
00:24:42,450 --> 00:24:39,660  
of something you better pay attention I

427  
00:24:45,830 --> 00:24:42,460  
also want to point out that the summary

428  
00:24:49,380 --> 00:24:45,840  
for policy makers of the IPCC is

429  
00:24:53,160 --> 00:24:49,390  
exceedingly conservative in its

430  
00:24:55,020 --> 00:24:53,170  
statements it is not just what the the

431  
00:24:58,080 --> 00:24:55,030  
lead authors of the chapters put

432  
00:25:01,560 --> 00:24:58,090  
together know the summary for policy

433  
00:25:04,430 --> 00:25:01,570  
makers who have been signed off on by

434  
00:25:07,380 --> 00:25:04,440  
representatives of every government

435  
00:25:09,960 --> 00:25:07,390  
including the Bush administration you

436  
00:25:12,840 --> 00:25:09,970  
know so you can imagine this is a very

437  
00:25:15,930 --> 00:25:12,850  
conservative statement and you better

438  
00:25:18,480 --> 00:25:15,940

pay attention to what it says it says

439

00:25:22,710 --> 00:25:18,490

yes this is a serious issue not that

440

00:25:24,720 --> 00:25:22,720

anybody has actually done anything so

441

00:25:29,700 --> 00:25:24,730

it's much more nuanced and the way you

442

00:25:33,810 --> 00:25:29,710

presented it 95 percent is not a hundred

443

00:25:38,610 --> 00:25:33,820

percent what the policymakers are being

444

00:25:42,480 --> 00:25:38,620

told is that there is no doubt that the

445

00:25:47,490 --> 00:25:42,490

production of co2 is adding to global

446

00:25:50,230 --> 00:25:47,500

warming in a dangerous fashion ten years

447

00:25:51,850 --> 00:25:50,240

ago Bjorn Lomborg

448

00:25:55,510 --> 00:25:51,860

a book called The Skeptical

449

00:25:59,530 --> 00:25:55,520

environmentalist and he didn't question

450

00:26:03,040 --> 00:25:59,540

that co2 is causing adding to global

451  
00:26:06,010 --> 00:26:03,050  
warming but he pointed out that all of

452  
00:26:10,560 --> 00:26:06,020  
the solutions being proposed namely to

453  
00:26:14,560 --> 00:26:10,570  
cut down the rate of emission of co2

454  
00:26:19,299 --> 00:26:14,570  
would not have an appreciable enough

455  
00:26:24,040 --> 00:26:19,309  
effect to make it unnecessary to adapt

456  
00:26:27,360 --> 00:26:24,050  
to the global warming changes and that

457  
00:26:32,470 --> 00:26:27,370  
therefore it would make a lot of sense

458  
00:26:36,220 --> 00:26:32,480  
not to try to cut co2 emissions but to

459  
00:26:39,010 --> 00:26:36,230  
plan for adaptations to rising sea

460  
00:26:44,230 --> 00:26:39,020  
levels and so on what happened to

461  
00:26:45,220 --> 00:26:44,240  
Lomborg he was in a book review in

462  
00:26:48,760 --> 00:26:45,230  
Nature

463  
00:26:52,950 --> 00:26:48,770

he was compared with a Holocaust denier

464

00:26:58,960 --> 00:26:52,960

list for saying that it was not

465

00:27:00,640 --> 00:26:58,970

necessary to cut co2 emissions are there

466

00:27:05,169 --> 00:27:00,650

other questions amongst the panel I'd

467

00:27:07,540 --> 00:27:05,179

like to comment on I believe it's

468

00:27:11,790 --> 00:27:07,550

probably about 10 years ago the IPCC

469

00:27:16,230 --> 00:27:11,800

came out and with about a 95% confidence

470

00:27:18,970 --> 00:27:16,240

level saying we're gonna continue having

471

00:27:21,040 --> 00:27:18,980

global warming it's gonna increase by an

472

00:27:25,930 --> 00:27:21,050

X amount of degrees in the next 10 years

473

00:27:28,900 --> 00:27:25,940

20 years yes it's on now that was a 95

474

00:27:29,680 --> 00:27:28,910

percent confidence although back about

475

00:27:32,620 --> 00:27:29,690

10 years ago

476  
00:27:34,720 --> 00:27:32,630  
however just a couple years ago they had

477  
00:27:36,790 --> 00:27:34,730  
to revise the forecast the temperature

478  
00:27:39,310 --> 00:27:36,800  
did not go up during that 10 year period

479  
00:27:40,780 --> 00:27:39,320  
and a couple years ago they said while

480  
00:27:42,820 --> 00:27:40,790  
the temperatures are now going to remain

481  
00:27:44,530 --> 00:27:42,830  
flat for the next 10 years and then

482  
00:27:47,410 --> 00:27:44,540  
we're gonna have warming taking off

483  
00:27:50,740 --> 00:27:47,420  
again so just a matter of five years

484  
00:27:52,990 --> 00:27:50,750  
they shot their 95 percent way down

485  
00:27:54,640 --> 00:27:53,000  
already beat they lost their out

486  
00:27:55,750 --> 00:27:54,650  
forecast or a fear they had to revise

487  
00:27:59,049 --> 00:27:55,760  
their forecast

488  
00:28:02,030 --> 00:27:59,059

so we're 95% confidence level is much

489

00:28:04,310 --> 00:28:02,040

much lower than 95% by confu

490

00:28:06,500 --> 00:28:04,320

full of natural cycles because they had

491

00:28:08,600 --> 00:28:06,510

to recognize a natural cycle that was

492

00:28:10,460 --> 00:28:08,610

keeping temperature about the same for

493

00:28:12,290 --> 00:28:10,470

ten years they they recognized the

494

00:28:14,570 --> 00:28:12,300

natural cycle and I showed you the

495

00:28:17,210 --> 00:28:14,580

natural cycles they have a 95%

496

00:28:20,450 --> 00:28:17,220

confidence level that's much lower than

497

00:28:22,610 --> 00:28:20,460

that now I have a 99% confidence level

498

00:28:31,400 --> 00:28:22,620

that the natural cycles are gonna be the

499

00:28:33,170 --> 00:28:31,410

dominant factor ninety-nine ninety-nine

500

00:28:42,380 --> 00:28:33,180

point nine percent and what about that

501  
00:28:45,410 --> 00:28:42,390  
one I'm not questioning that human

502  
00:28:50,360 --> 00:28:45,420  
actions are producing appreciable

503  
00:28:54,230 --> 00:28:50,370  
effects I think our greatest problem is

504  
00:28:56,750 --> 00:28:54,240  
there are too many people on earth one

505  
00:29:02,200 --> 00:28:56,760  
of the greatest problems of using fossil

506  
00:29:06,110 --> 00:29:02,210  
fuels is that they distribute I randomly

507  
00:29:10,340 --> 00:29:06,120  
heavy metals which are toxic and which

508  
00:29:16,900 --> 00:29:10,350  
will never be able to be removed again

509  
00:29:21,230 --> 00:29:16,910  
and it environmental quality in general

510  
00:29:26,320 --> 00:29:21,240  
decreases but human actions are not

511  
00:29:31,340 --> 00:29:26,330  
adding to global warming because of co2

512  
00:29:33,950 --> 00:29:31,350  
emissions to get over there I have a

513  
00:29:44,030 --> 00:29:38,960

[Music]

514

00:29:48,630 --> 00:29:44,040

the evidence is not conclusive that

515

00:29:52,140 --> 00:29:48,640

emission of co2 is adding to the rate of

516

00:29:57,140 --> 00:29:52,150

global warm okay David yes I have a

517

00:30:03,330 --> 00:29:57,150

question this morning wonderful talk on

518

00:30:06,360 --> 00:30:03,340

on the open e Arctic the glacier which

519

00:30:09,990 --> 00:30:06,370

you say has as smallness now than it has

520

00:30:14,190 --> 00:30:10,000

been in 5000 years or over 37,000 years

521

00:30:18,030 --> 00:30:14,200

and what I was kind of wondering is the

522

00:30:19,770 --> 00:30:18,040

cycles is talking about cycles where the

523

00:30:22,920 --> 00:30:19,780

global warming cycles are the warmest

524

00:30:24,930 --> 00:30:22,930

every 12-15 hundred years every fifteen

525

00:30:28,890 --> 00:30:24,940

hundred years and you you keep saying it

526

00:30:30,270 --> 00:30:28,900

was warmer it's warmer now but it was

527

00:30:33,150 --> 00:30:30,280

5000 years ago

528

00:30:35,190 --> 00:30:33,160

however 5,000 years ago 6,000 years ago

529

00:30:37,950 --> 00:30:35,200

there was 50 percent less ice in the

530

00:30:39,600 --> 00:30:37,960

Arctic and if you look at the figures on

531

00:30:43,290 --> 00:30:39,610

the temperatures there was much warmer

532

00:30:45,570 --> 00:30:43,300

back at that time but it is now and as

533

00:30:47,250 --> 00:30:45,580

far as the glacier every 1,500 years

534

00:30:48,900 --> 00:30:47,260

when we had the warmer global warming

535

00:30:50,640 --> 00:30:48,910

cycles that Galatia would be getting

536

00:30:53,130 --> 00:30:50,650

smaller and smaller and smaller so of

537

00:30:56,130 --> 00:30:53,140

course it's smaller today but it was

538

00:31:06,930 --> 00:30:56,140

5000 years ago it should be smaller than

539

00:31:09,180 --> 00:31:06,940

today this is a natural cycle I thought

540

00:31:10,590 --> 00:31:09,190

you said today we're warm up and well

541

00:31:27,620 --> 00:31:10,600

you have been in front passed by a

542

00:31:45,650 --> 00:31:30,620

so are we warmer or are we colder than

543

00:31:48,260 --> 00:31:45,660

5,000 years ago then why did way of 50%

544

00:32:09,980 --> 00:31:48,270

less ice in the Arctic five to six

545

00:32:11,690 --> 00:32:09,990

thousand years ago I have a graphic on

546

00:32:14,060 --> 00:32:11,700

my computer but shows the temperatures

547

00:32:17,720 --> 00:32:14,070

5000 years ago the created temperature

548

00:32:18,230 --> 00:32:17,730

you can never warm up I've never seen

549

00:32:20,840 --> 00:32:18,240

that data

550

00:32:23,630 --> 00:32:20,850

I'll show it to you it's clear that

551  
00:32:24,250 --> 00:32:23,640  
we're not getting very far on the panel

552  
00:32:28,610 --> 00:32:24,260  
up here

553  
00:32:31,850 --> 00:32:28,620  
so now's an opportunity for you to ask

554  
00:32:34,340 --> 00:32:31,860  
questions and add input I would like you

555  
00:32:37,279 --> 00:32:34,350  
to give your name and if it's a question

556  
00:32:41,710 --> 00:32:37,289  
that would be ideal if you just want to

557  
00:32:43,820 --> 00:32:41,720  
make a statement keep it very short yes

558  
00:32:45,500 --> 00:32:43,830  
make sure it's turned on there's a

559  
00:32:47,810 --> 00:32:45,510  
switch somewhere there got it underneath

560  
00:32:49,630 --> 00:32:47,820  
I think we got it now okay thank you

561  
00:32:53,149 --> 00:32:49,640  
very much for a very interesting

562  
00:32:55,010 --> 00:32:53,159  
comments I think there is a rational

563  
00:32:58,159 --> 00:32:55,020

approach to this and I guess this

564

00:33:01,130 --> 00:32:58,169

dovetails on what Henry was saying if we

565

00:33:02,240 --> 00:33:01,140

were to cut co2 emissions like right

566

00:33:06,039 --> 00:33:02,250

away all of a sudden you know

567

00:33:09,169 --> 00:33:06,049

drastically no I said I expect that

568

00:33:12,980 --> 00:33:09,179

warming would continue anyway it does

569

00:33:16,789 --> 00:33:12,990

seem to me that in this era particularly

570

00:33:19,279 --> 00:33:16,799

in this austere area if we are to decide

571

00:33:22,340 --> 00:33:19,289

where to spend scarce financial

572

00:33:24,740 --> 00:33:22,350

resources on how to deal with it we

573

00:33:26,870 --> 00:33:24,750

would try to reduce the human footprint

574

00:33:29,210 --> 00:33:26,880

not just carbon but you know with the

575

00:33:30,790 --> 00:33:29,220

reduction of species lack of fresh water

576

00:33:34,330 --> 00:33:30,800

I mean there's any number

577

00:33:36,730 --> 00:33:34,340

seems like the adaptation that Henry was

578

00:33:38,860 --> 00:33:36,740

talking about would be where to put our

579

00:33:41,770 --> 00:33:38,870

scarce financial resources as far as

580

00:33:43,780 --> 00:33:41,780

dealing with it regardless of what the

581

00:34:32,230 --> 00:33:43,790

science says about co2 emissions and

582

00:34:34,600 --> 00:34:32,240

warming if it rises slowly I want to say

583

00:34:39,610 --> 00:34:34,610

the last because right that if we were

584

00:34:41,610 --> 00:34:39,620

to stop co2 emission 100% right now the

585

00:34:45,240 --> 00:34:41,620

earth would still continue to warm

586

00:34:48,850 --> 00:34:45,250

because the oceans haven't yet caught up

587

00:34:51,370 --> 00:34:48,860

with the present level of co2 there's a

588

00:34:53,610 --> 00:34:51,380

half a degree or centigrade or so of

589

00:34:56,470 --> 00:34:53,620

warming is already in the pipeline

590

00:35:00,220 --> 00:34:56,480

nobody is saying that we should cut co2

591

00:35:02,860 --> 00:35:00,230

emissions suddenly that's a disaster we

592

00:35:05,290 --> 00:35:02,870

all know that now what we ought to do is

593

00:35:08,110 --> 00:35:05,300

come up with sensible policies policies

594

00:35:11,950 --> 00:35:08,120

to wean ourselves from our dependence on

595

00:35:13,600 --> 00:35:11,960

fossil fuels and one of the arguments is

596

00:35:15,340 --> 00:35:13,610

that we shouldn't be dependent on oil

597

00:35:18,190 --> 00:35:15,350

from the Middle East I mean is this a

598

00:35:20,800 --> 00:35:18,200

national security issue and actually we

599

00:35:22,960 --> 00:35:20,810

can't do that now is that worth the

600

00:35:28,210 --> 00:35:22,970

investment there's something we can

601  
00:35:32,850 --> 00:35:28,220  
debate about as I showed my presentation

602  
00:35:35,830 --> 00:35:32,860  
this morning there is evidence that co2

603  
00:35:37,970 --> 00:35:35,840  
was as high a thousand years ago as it

604  
00:35:41,690 --> 00:35:37,980  
was today no

605  
00:35:42,470 --> 00:35:41,700  
no you and I are you sitting there at my

606  
00:35:44,060 --> 00:35:42,480  
presentation

607  
00:35:45,980 --> 00:35:44,070  
yes where you were sitting there at my

608  
00:35:50,690 --> 00:35:45,990  
presentation this morning I didn't

609  
00:35:53,720 --> 00:35:50,700  
recognize your figures those aren't my

610  
00:35:57,260 --> 00:35:53,730  
facts I did it that is not my research

611  
00:35:59,750 --> 00:35:57,270  
that is announces to me that is

612  
00:36:01,070 --> 00:35:59,760  
peer-reviewed research by dr. Beck oh

613  
00:36:05,570 --> 00:36:01,080

yeah I know him

614

00:36:07,280 --> 00:36:05,580

yes he makes it up have you made your

615

00:36:09,830 --> 00:36:07,290

statement you Nate needs some more time

616

00:36:10,250 --> 00:36:09,840

- that's right Henry would you like to

617

00:36:12,800 --> 00:36:10,260

come in

618

00:36:16,400 --> 00:36:12,810

well I I fully agree we should we now

619

00:36:22,130 --> 00:36:16,410

sell from having to use fossil fuels

620

00:36:27,710 --> 00:36:22,140

especially oil but I believe that we

621

00:36:30,380 --> 00:36:27,720

shouldn't use bad wrong reasons for

622

00:36:33,290 --> 00:36:30,390

saying that that's what we should do

623

00:36:36,050 --> 00:36:33,300

because sooner or later that will

624

00:36:39,230 --> 00:36:36,060

backfire on us one of the things that

625

00:36:43,099 --> 00:36:39,240

hasn't been mentioned is that over the

626  
00:36:46,609 --> 00:36:43,109  
history of the earth global temperature

627  
00:36:50,690 --> 00:36:46,619  
has buried over a range of 15 degrees

628  
00:36:53,890 --> 00:36:50,700  
centigrade in the last million years it

629  
00:36:57,890 --> 00:36:53,900  
has varied over a range of six degrees

630  
00:37:03,980 --> 00:36:57,900  
centigrade we are now just coming out of

631  
00:37:06,200 --> 00:37:03,990  
one of the rare short periods of cold so

632  
00:37:10,370 --> 00:37:06,210  
there's no question that things are

633  
00:37:14,780 --> 00:37:10,380  
warming up for reasons that are quite

634  
00:37:18,620 --> 00:37:14,790  
separate from co2 and reasons moreover

635  
00:37:22,880 --> 00:37:18,630  
which we don't understand there is no

636  
00:37:27,410 --> 00:37:22,890  
agreed reason for those 15 degree and

637  
00:37:31,070 --> 00:37:27,420  
six degree ranges so there is no way in

638  
00:37:32,120 --> 00:37:31,080

which we can know from data in the last

639

00:37:36,350 --> 00:37:32,130

hundred

640

00:37:39,230 --> 00:37:36,360

years that the rate of warming is

641

00:37:42,920 --> 00:37:39,240

greater than it was at one of the

642

00:37:46,960 --> 00:37:42,930

earlier periods of warming okay next

643

00:37:52,810 --> 00:37:46,970

question thanks for having this great

644

00:37:57,010 --> 00:37:52,820

debate my name is sky Nelson and I

645

00:37:59,240 --> 00:37:57,020

appreciate what's being said and I'm

646

00:38:01,880 --> 00:37:59,250

sort of emotionally charged I guess as

647

00:38:04,250 --> 00:38:01,890

many of us are on this issue my my

648

00:38:06,650 --> 00:38:04,260

question is I guess to Henry and to

649

00:38:12,620 --> 00:38:06,660

David specifically although anyone can

650

00:38:14,330 --> 00:38:12,630

answer it sounds like we do not whether

651  
00:38:16,900 --> 00:38:14,340  
or not wherever the evidence is I mean I

652  
00:38:20,660 --> 00:38:16,910  
I know where the evidence is but

653  
00:38:22,430 --> 00:38:20,670  
regardless of that we know that there's

654  
00:38:26,410 --> 00:38:22,440  
a need to act for two reasons one

655  
00:38:29,420 --> 00:38:26,420  
because the consequences are so dire if

656  
00:38:32,810 --> 00:38:29,430  
the current models that I understand are

657  
00:38:33,830 --> 00:38:32,820  
correct of climate change so expensive I

658  
00:38:35,690 --> 00:38:33,840  
should say if you just want to put in

659  
00:38:37,660 --> 00:38:35,700  
those terms much more expensive to wait

660  
00:38:40,370 --> 00:38:37,670  
and see and have to adapt quickly to

661  
00:38:42,920 --> 00:38:40,380  
moving our cities dealing with forests

662  
00:38:44,120 --> 00:38:42,930  
dying and various other effects it would

663  
00:38:46,160 --> 00:38:44,130

happen from global climate change much

664

00:38:47,990 --> 00:38:46,170

more expensive to wait and see then to

665

00:38:50,510 --> 00:38:48,000

do it than to do be a little proactive

666

00:38:52,160 --> 00:38:50,520

about it and we don't need evidence

667

00:38:53,810 --> 00:38:52,170

the second point would be the question

668

00:38:56,360 --> 00:38:53,820

would be we don't need evidence to know

669

00:39:00,620 --> 00:38:56,370

that a change needs to be made if if I

670

00:39:02,630 --> 00:39:00,630

am eating too much of high-fat foods for

671

00:39:04,850 --> 00:39:02,640

instance I know that a system like my

672

00:39:06,530 --> 00:39:04,860

body needs to be in balance we know that

673

00:39:08,300 --> 00:39:06,540

it we know that about the planet as well

674

00:39:13,670 --> 00:39:08,310

needs to be in balance so how is it

675

00:39:14,570 --> 00:39:13,680

possible that we can justify the amount

676

00:39:17,990 --> 00:39:14,580

of carbon we're putting in the

677

00:39:21,140 --> 00:39:18,000

atmosphere and not take action to

678

00:39:23,630 --> 00:39:21,150

mitigate that and to limit it even if we

679

00:39:27,470 --> 00:39:23,640

don't agree on the evidence

680

00:39:31,160 --> 00:39:27,480

I would justify the amount of carbon in

681

00:39:37,970 --> 00:39:31,170

the atmosphere justify not taking action

682

00:39:42,530 --> 00:39:37,980

if we speak what are the problems of of

683

00:39:45,650 --> 00:39:42,540

modern life is that lots of things are

684

00:39:50,120 --> 00:39:45,660

being done that you could not justify on

685

00:39:53,690 --> 00:39:50,130

a rational basis but we are living in a

686

00:39:56,060 --> 00:39:53,700

very complex sort of society where just

687

00:39:59,150 --> 00:39:56,070

because you can see that something would

688

00:40:04,850 --> 00:39:59,160

be reasonable to do doesn't mean that it

689

00:40:08,570 --> 00:40:04,860

will get done it's still a duty to argue

690

00:40:10,850 --> 00:40:08,580

and to make arguments and talk to people

691

00:40:13,480 --> 00:40:10,860

that we should do what is reasonable

692

00:40:16,250 --> 00:40:13,490

even though we are not always successful

693

00:40:19,100 --> 00:40:16,260

that's our obligation it's a moral

694

00:40:21,560 --> 00:40:19,110

obligation on the part of scientists who

695

00:40:26,360 --> 00:40:21,570

understand climate change and also if

696

00:40:29,810 --> 00:40:26,370

you agree you have a moral obligation to

697

00:40:31,640 --> 00:40:29,820

try to act on this well one thing I'd

698

00:40:34,280 --> 00:40:31,650

like to point out is the ice core

699

00:40:37,520 --> 00:40:34,290

samples but I showed the hundred and

700

00:40:40,370 --> 00:40:37,530

sixteen thousand years cycles where

701  
00:40:42,920 --> 00:40:40,380  
scientists say carbon dioxide has never

702  
00:40:44,900 --> 00:40:42,930  
been above 300 parts per million now

703  
00:40:49,160 --> 00:40:44,910  
showed you this morning those are mean

704  
00:40:51,650 --> 00:40:49,170  
values of 200 to 1000 years mean values

705  
00:40:53,990 --> 00:40:51,660  
they take in five global warming cycles

706  
00:40:55,400 --> 00:40:54,000  
where you have ups and downs over a

707  
00:40:58,400 --> 00:40:55,410  
thousand years

708  
00:41:00,740 --> 00:40:58,410  
if you mean any data you're gonna

709  
00:41:02,990 --> 00:41:00,750  
eliminate all the spikes in my data and

710  
00:41:05,810 --> 00:41:03,000  
they're saying it was 298

711  
00:41:07,460 --> 00:41:05,820  
parts per million the mean data and they

712  
00:41:10,760 --> 00:41:07,470  
say it's never been higher than that

713  
00:41:14,030 --> 00:41:10,770

anyone with any knowledge at all those

714

00:41:14,730 --> 00:41:14,040

it has to be higher than 298 if you were

715

00:41:19,380 --> 00:41:14,740

meaning

716

00:41:22,650 --> 00:41:19,390

over a thousand years we know we overed

717

00:41:25,950 --> 00:41:22,660

over on these cycles we approach higher

718

00:41:28,800 --> 00:41:25,960

much higher levels of co2 so why should

719

00:41:31,290 --> 00:41:28,810

we act on looking at one carbon dioxide

720

00:41:33,270 --> 00:41:31,300

cycle that's what we're looking at one

721

00:41:36,720 --> 00:41:33,280

carbon dioxide cycle during the past

722

00:41:39,990 --> 00:41:36,730

hundred years and we want to take action

723

00:41:42,839 --> 00:41:40,000

that will economically hurt the whole

724

00:41:46,910 --> 00:41:42,849

world we don't have to do that

725

00:41:51,060 --> 00:41:46,920

carbon dioxide is a very good gas

726

00:41:53,940 --> 00:41:51,070

through photosynthesis plants take in

727

00:41:55,920 --> 00:41:53,950

carbon dioxide and produce oxygen this

728

00:41:59,250 --> 00:41:55,930

is a natural cycle that has been set up

729

00:42:01,710 --> 00:41:59,260

by God by the creator of the world and

730

00:42:05,670 --> 00:42:01,720

the universe and we wanna tinker with it

731

00:42:09,410 --> 00:42:05,680

and I don't care what you guys say read

732

00:42:12,030 --> 00:42:09,420

your Bible I can I can my wife and I

733

00:42:13,980 --> 00:42:12,040

were in Holland in January

734

00:42:25,650 --> 00:42:13,990

my wife is Dutch and we go there

735

00:42:25,660 --> 00:43:09,829

[Music]

736

00:43:15,470 --> 00:43:14,010

and it is not visible to you cycles they

737

00:43:18,870 --> 00:43:15,480

are not there

738

00:43:20,670 --> 00:43:18,880

what are you comparing the 10,000 year

739

00:43:23,329 --> 00:43:20,680

cycles to do you have an instrument to

740

00:43:25,859 --> 00:43:23,339

compare that to how can you verify it

741

00:43:28,560 --> 00:43:25,869

the samples from the centre of

742

00:43:30,240 --> 00:43:28,570

Antarctica are an average when you

743

00:43:32,450 --> 00:43:30,250

measure co2 in air bubbles they are an

744

00:43:37,170 --> 00:43:32,460

average of several hundred years perhaps

745

00:43:41,070 --> 00:43:37,180

500 years and but you talk about cycles

746

00:43:42,839 --> 00:43:41,080

that are spikes that must be present

747

00:43:45,990 --> 00:43:42,849

there but they are not present in the

748

00:43:49,560 --> 00:43:46,000

samples you it's an hypothesis of yours

749

00:43:56,250 --> 00:43:49,570

you say they must be there well it's not

750

00:44:00,000 --> 00:43:56,260

in the data that's because it takes it

751

00:44:02,220 --> 00:44:00,010

takes such a long take 7,000 years for

752

00:44:04,380 --> 00:44:02,230

it to the bubbles to become locked into

753

00:44:07,500 --> 00:44:04,390

me in the voice now you are taking

754

00:44:11,099 --> 00:44:07,510

readings in the face but receive great a

755

00:44:12,839 --> 00:44:11,109

snowfall quicker I know that but you

756

00:44:15,000 --> 00:44:12,849

don't have them but you don't have the

757

00:44:21,320 --> 00:44:15,010

instrument data to compare that to from

758

00:44:25,859 --> 00:44:23,970

at least tonight we might resolve it

759

00:44:28,050 --> 00:44:25,869

sometime a nothing next question

760

00:44:31,980 --> 00:44:28,060

well hopefully this question is relevant

761

00:44:34,490 --> 00:44:31,990

I hope so charge on Kinnaman University

762

00:44:39,720 --> 00:44:34,500

of Colorado series former NOAA

763

00:44:41,400 --> 00:44:39,730

I tried to think of how to put this as a

764

00:44:44,790 --> 00:44:41,410

question so that it's not entirely a

765

00:44:49,020 --> 00:44:44,800

comment and so the question is what is

766

00:44:52,260 --> 00:44:49,030

the proper use of historical analysis

767

00:44:54,810 --> 00:44:52,270

and it's a loaded question so in Roger

768

00:44:59,520 --> 00:44:54,820

pill key style I'll reveal my bias which

769

00:45:02,730 --> 00:44:59,530

we all have in particular I think that

770

00:45:04,980 --> 00:45:02,740

historical analysis is properly used to

771

00:45:08,200 --> 00:45:04,990

determine causes in a system we detect

772

00:45:10,390 --> 00:45:08,210

patterns we investigate those patterns

773

00:45:13,390 --> 00:45:10,400

and we try to find out what the system

774

00:45:16,150 --> 00:45:13,400

is doing what historical analysis is not

775

00:45:17,500 --> 00:45:16,160

good for his prediction if it were Dave

776

00:45:19,540 --> 00:45:17,510

Lee would be a very rich man

777

00:45:21,940 --> 00:45:19,550

today having invested wisely in the

778

00:45:26,460 --> 00:45:21,950

stock market based on his historical

779

00:45:29,770 --> 00:45:26,470

analysis of the cycles also in medicine

780

00:45:31,299 --> 00:45:29,780

simply because I tend to get sick once a

781

00:45:33,130 --> 00:45:31,309

year doesn't mean I don't go to the

782

00:45:34,960 --> 00:45:33,140

doctor this year to find out why I'm

783

00:45:38,410 --> 00:45:34,970

sick or what the diagnosis and prognosis

784

00:45:40,859 --> 00:45:38,420

might be furthermore something that's

785

00:45:44,319 --> 00:45:40,869

not going to be discussed here is

786

00:45:46,569 --> 00:45:44,329

ecology we are currently in one of the

787

00:45:49,120 --> 00:45:46,579

greatest extinction events on the planet

788

00:45:53,470 --> 00:45:49,130

ever recorded probably equal to the

789

00:45:55,299 --> 00:45:53,480

greatest under this logic of historical

790

00:45:57,180 --> 00:45:55,309

analysis we should ignore it because it

791

00:46:00,400 --> 00:45:57,190

happened before

792

00:46:02,589 --> 00:46:00,410

so that's that's my basic question and

793

00:46:05,940 --> 00:46:02,599

as far as David's last comment I believe

794

00:46:10,870 --> 00:46:05,950

God gave us brains so that we use them

795

00:46:13,180 --> 00:46:10,880

well we should learn from history and

796

00:46:17,370 --> 00:46:13,190

one of the things we learn from history

797

00:46:21,520 --> 00:46:17,380

is that competent scientists disagree

798

00:46:25,240 --> 00:46:21,530

for certain periods of time on important

799

00:46:29,829 --> 00:46:25,250

issues and that the mainstream consensus

800

00:46:34,569 --> 00:46:29,839

has often turned out to be wrong I fully

801  
00:46:37,720 --> 00:46:34,579  
agree with Peter tons that it is a moral

802  
00:46:43,740 --> 00:46:37,730  
obligation for scientists to tell the

803  
00:46:46,960 --> 00:46:43,750  
truth as they see it the trouble is that

804  
00:46:51,130 --> 00:46:46,970  
equally qualified scientists don't

805  
00:47:09,760 --> 00:46:51,140  
always see the truth in the same way if

806  
00:47:14,589 --> 00:47:09,770  
you go to the website [www.cpsc.gov](http://www.cpsc.gov) Esser

807  
00:47:18,339 --> 00:47:14,599  
emeritus of the University of Virginia

808  
00:47:21,940 --> 00:47:18,349  
professor emeritus of from George Mason

809  
00:47:25,589 --> 00:47:21,950  
University who held highly responsible

810  
00:47:30,489 --> 00:47:25,599  
positions in a number of institutions

811  
00:47:33,489 --> 00:47:30,499  
both in research and in policy one of

812  
00:47:37,120 --> 00:47:33,499  
the things that is wrong with debates

813  
00:47:41,620 --> 00:47:37,130

about things like global warming is that

814

00:47:45,309 --> 00:47:41,630

they become politicized and in the

815

00:47:49,779 --> 00:47:45,319

global warming debate what as in many

816

00:47:51,549 --> 00:47:49,789

others it is common practice to say that

817

00:47:56,999 --> 00:47:51,559

those who disagree with the mainstream

818

00:48:01,329 --> 00:47:57,009

view right-wing political conservatives

819

00:48:07,059 --> 00:48:01,339

that is not only irrelevant it's also

820

00:48:11,380 --> 00:48:07,069

wrong because I worked for Obama in 2008

821

00:48:15,729 --> 00:48:11,390

I'm gonna work for him again in 2012 and

822

00:48:19,089 --> 00:48:15,739

I happen to agree with Fred singer who

823

00:48:21,489 --> 00:48:19,099

is a right-wing conservative but we

824

00:48:25,719 --> 00:48:21,499

agree with one another on the basis of

825

00:48:28,989 --> 00:48:25,729

evidence not of politics I agree that we

826

00:48:31,989 --> 00:48:28,999

should be on best evidence I know singer

827

00:48:33,670 --> 00:48:31,999

actually quite well I'm sure and it's

828

00:48:37,299 --> 00:48:33,680

also an interesting book he was

829

00:48:41,890 --> 00:48:37,309

described in a book by Naomi Oreskes oh

830

00:48:43,870 --> 00:48:41,900

resque es the title is merchants of

831

00:48:46,779 --> 00:48:43,880

doubt' and singing is one of the main

832

00:48:49,359 --> 00:48:46,789

characters being described Oreskes is

833

00:48:52,049 --> 00:48:49,369

historian of science as he points out a

834

00:48:55,239 --> 00:48:52,059

singing was wrong on the issue of

835

00:48:58,900 --> 00:48:55,249

whether smoking is bad for your health

836

00:49:00,819 --> 00:48:58,910

he was also wrong with the ozone hole he

837

00:49:04,870 --> 00:49:00,829

was also wrong about the acidification

838

00:49:07,479 --> 00:49:04,880

of lakes acid rain and he has quite a

839

00:49:11,229 --> 00:49:07,489

track record actually you see this is

840

00:49:13,479 --> 00:49:11,239

another type of argument which is

841

00:49:14,870 --> 00:49:13,489

irrelevant and wrong and I could

842

00:49:18,690 --> 00:49:14,880

probably

843

00:49:21,900 --> 00:49:18,700

wait a minute the fact that a person can

844

00:49:24,120 --> 00:49:21,910

be wrong on three issues doesn't mean

845

00:49:26,220 --> 00:49:24,130

they're wrong on the fourth there are a

846

00:49:28,530 --> 00:49:26,230

number of issues that I've been wrong

847

00:49:30,240 --> 00:49:28,540

about and there a number that I've been

848

00:49:33,630 --> 00:49:30,250

right learned from history

849

00:49:36,390 --> 00:49:33,640

actually okay next question for the

850

00:49:39,240 --> 00:49:36,400

audience thank you thank you very much

851  
00:49:41,760 --> 00:49:39,250  
for the very insightful conversation in

852  
00:49:44,430 --> 00:49:41,770  
its very education thank you my name is

853  
00:49:47,250 --> 00:49:44,440  
Ross Ross Locklear I am from Roxbury

854  
00:49:54,210 --> 00:49:47,260  
Colorado this I would like to hear from

855  
00:49:57,690 --> 00:49:54,220  
every panelist I guess your personal and

856  
00:50:00,120 --> 00:49:57,700  
professional truthful recommendation to

857  
00:50:03,210 --> 00:50:00,130  
that the world leaders

858  
00:50:06,290 --> 00:50:03,220  
what are your realistic the most

859  
00:50:11,420 --> 00:50:06,300  
realistic hard-driven

860  
00:50:15,349 --> 00:50:11,430  
strategies that you will recommend to

861  
00:50:19,080 --> 00:50:15,359  
the world leaders how do we move forward

862  
00:50:22,200 --> 00:50:19,090  
with this global warming thank you

863  
00:50:25,320 --> 00:50:22,210

[Music]

864

00:50:27,839 --> 00:50:25,330

I wish I could give you insightful

865

00:50:31,560 --> 00:50:27,849

answer I think that the first step is

866

00:50:34,290 --> 00:50:31,570

acknowledgement I mean we have to have a

867

00:50:37,109 --> 00:50:34,300

global consensus that this is an issue

868

00:50:44,960 --> 00:50:37,119

of importance without that we can't get

869

00:50:52,730 --> 00:50:49,549

but the exact clearly we have to reduce

870

00:50:54,510 --> 00:50:52,740

fossil fuel we there's nobody is

871

00:51:10,140 --> 00:50:54,520

sensible as arguing that we should

872

00:51:12,839 --> 00:51:10,150

immediately stop because there are

873

00:51:15,799 --> 00:51:12,849

examples actually afford states have

874

00:51:20,450 --> 00:51:15,809

been successful in doing this from

875

00:51:25,109 --> 00:51:20,460

Sweden after the oil shocks in the 1970s

876

00:51:27,390 --> 00:51:25,119

decided for economic reasons not to

877

00:51:30,450 --> 00:51:27,400

lower the dependence on imported energy

878

00:51:34,230 --> 00:51:30,460

and so they went on an energy efficiency

879

00:51:38,010 --> 00:51:34,240

program and also for electricity went

880

00:51:41,880 --> 00:51:38,020

nuclear and they managed with technology

881

00:51:46,400 --> 00:51:41,890

in the 1970s to decrease their per

882

00:51:54,569 --> 00:51:46,410

capita co2 emissions by a factor of two

883

00:51:57,809 --> 00:51:54,579

we know this can be done well I don't

884

00:52:01,049 --> 00:51:57,819

think it's our role we're not competent

885

00:52:04,319 --> 00:52:01,059

to tell world political leaders what to

886

00:52:08,010 --> 00:52:04,329

do that's why we happen to be scientists

887

00:52:11,220 --> 00:52:08,020

or historians and not politicians what

888

00:52:13,920 --> 00:52:11,230

we should do is to make plain to them

889

00:52:18,870 --> 00:52:13,930

what the division and the range of

890

00:52:21,329 --> 00:52:18,880

opinions is on any given matter next

891

00:52:23,460 --> 00:52:21,339

question from the audience my my name is

892

00:52:25,770 --> 00:52:23,470

noisy honey my question has to do with

893

00:52:26,000 --> 00:52:25,780

remote viewing I don't know if any of

894

00:52:28,550 --> 00:52:26,010

the

895

00:52:31,640 --> 00:52:28,560

analysts believe in remote viewing or

896

00:52:33,410 --> 00:52:31,650

consider it to be a valid method of

897

00:52:36,350 --> 00:52:33,420

obtaining information but I'll still ask

898

00:52:38,770 --> 00:52:36,360

my question do you know if any serious

899

00:52:42,620 --> 00:52:38,780

effort has been made to engage any

900

00:52:51,260 --> 00:52:42,630

expert and credible remote viewers to

901  
00:53:02,690 --> 00:52:51,270  
help us find out information about can

902  
00:53:04,850 --> 00:53:02,700  
you explain to me remote viewing is a

903  
00:53:06,850 --> 00:53:04,860  
situation where someone let's say in the

904  
00:53:09,950 --> 00:53:06,860  
laboratory and some other person is out

905  
00:53:12,920 --> 00:53:09,960  
in the community and the person in the

906  
00:53:14,900 --> 00:53:12,930  
laboratory remotely determines what the

907  
00:53:16,880 --> 00:53:14,910  
other person is looking at there are

908  
00:53:20,630 --> 00:53:16,890  
lots of variations of that but that's

909  
00:53:33,410 --> 00:53:20,640  
what's called remote viewing and many

910  
00:53:36,950 --> 00:53:33,420  
people some in this describe an

911  
00:53:39,160 --> 00:53:36,960  
experiment who had done remote viewing

912  
00:53:41,990 --> 00:53:39,170  
for the United States military

913  
00:53:44,120 --> 00:53:42,000

Department of Defense and so forth we're

914

00:53:45,650 --> 00:53:44,130  
engaged to do remote viewing to

915

00:53:47,240 --> 00:53:45,660  
determine or at least provide

916

00:53:50,060 --> 00:53:47,250  
information of what might be happening

917

00:53:57,380 --> 00:53:50,070  
on the planet Mars I was trying to give

918

00:53:59,990 --> 00:53:57,390  
a second you should ask for names of

919

00:54:04,520 --> 00:54:00,000  
people who might know about that you

920

00:54:07,370 --> 00:54:04,530  
should ask Courtney Browns next question

921

00:54:10,670 --> 00:54:07,380  
from the audience hi my name is Emery

922

00:54:13,190 --> 00:54:10,680  
I'm from New York I'm gonna put forward

923

00:54:15,650 --> 00:54:13,200  
a metaphor and I'm interested in if it

924

00:54:18,770 --> 00:54:15,660  
draws any comments from you the metaphor

925

00:54:21,410 --> 00:54:18,780  
would be civilizations have seemed to

926  
00:54:23,420 --> 00:54:21,420  
have a natural rise and fall and with

927  
00:54:27,530 --> 00:54:23,430  
that comes the development of technology

928  
00:54:30,380 --> 00:54:27,540  
and so we're in a civilization and it

929  
00:54:32,510 --> 00:54:30,390  
has risen and with that has come the

930  
00:54:35,990 --> 00:54:32,520  
rise of Technology and that rise of

931  
00:54:38,780 --> 00:54:36,000  
technology has been let's say exceeding

932  
00:54:41,150 --> 00:54:38,790  
the all the other cycles by a huge

933  
00:54:45,140 --> 00:54:41,160  
amount we now have the ability to

934  
00:54:47,540 --> 00:54:45,150  
explore the the universe and we have the

935  
00:54:50,450 --> 00:54:47,550  
Internet

936  
00:54:52,100 --> 00:54:50,460  
I feel like this metaphor might be

937  
00:54:56,020 --> 00:54:52,110  
applicable to the one we're currently at

938  
00:55:02,990 --> 00:54:56,030

where we have natural rise and fall of

939

00:55:05,840 --> 00:55:03,000

climate change and of co2 so do you have

940

00:55:08,300 --> 00:55:05,850

any comment on that I'd like to comment

941

00:55:10,730 --> 00:55:08,310

on that you're talking about new

942

00:55:12,320 --> 00:55:10,740

technology and that was it exactly what

943

00:55:16,030 --> 00:55:12,330

I was showing in my presentation this

944

00:55:19,940 --> 00:55:16,040

morning was new technology for

945

00:55:23,930 --> 00:55:19,950

forecasting climate changes by looking

946

00:55:27,650 --> 00:55:23,940

at the gravitational field of the Earth

947

00:55:31,720 --> 00:55:27,660

and Moon and also you can use the the

948

00:55:34,490 --> 00:55:31,730

sunspot Monda minimums or increases

949

00:55:36,470 --> 00:55:34,500

which have all been proven to have

950

00:55:39,440 --> 00:55:36,480

effects on the world's temperatures and

951

00:55:41,780 --> 00:55:39,450

my technology is brand new there are

952

00:55:44,450 --> 00:55:41,790

some other scientists in the world using

953

00:55:46,910 --> 00:55:44,460

the same type of technology ism IM the

954

00:55:49,190 --> 00:55:46,920

government's are not because it has not

955

00:55:51,620 --> 00:55:49,200

been funded by grants anywhere so the

956

00:55:55,010 --> 00:55:51,630

government's are unaware of this

957

00:55:58,040 --> 00:55:55,020

technology this is new technology and

958

00:56:01,370 --> 00:55:58,050

yes this should be applied to our

959

00:56:03,020 --> 00:56:01,380

problems in the future if you look at

960

00:56:05,150 --> 00:56:03,030

new technology this is what everything

961

00:56:09,080 --> 00:56:05,160

is about new technology new technology

962

00:56:10,820 --> 00:56:09,090

for energy and on my presentation I'm

963

00:56:13,970 --> 00:56:10,830

showing we're all ready to go into a

964

00:56:18,620 --> 00:56:13,980

very deep global cooling so why should

965

00:56:23,090 --> 00:56:18,630

we ruin will in the world's economy by

966

00:56:25,400 --> 00:56:23,100

going on a chase with technology that

967

00:56:28,400 --> 00:56:25,410

will do not even have or a very good

968

00:56:30,590 --> 00:56:28,410

technology in 50 75 years we're going to

969

00:56:33,490 --> 00:56:30,600

have great technology for it for a

970

00:56:35,010 --> 00:56:33,500

different energy we can wait for that

971

00:56:39,370 --> 00:56:35,020

we have plenty of fossil fuel energy

972

00:56:41,980 --> 00:56:39,380

fossil fuel is not hurting the world it

973

00:56:44,950 --> 00:56:41,990

is not it is very good to plant life we

974

00:56:47,290 --> 00:56:44,960

need vegetation we have seven billion

975

00:56:49,349 --> 00:56:47,300

people here on earth and it's been

976

00:56:52,450 --> 00:56:49,359

proven that during the past ten years

977

00:56:53,580 --> 00:56:52,460

vegetation is growing faster and we have

978

00:56:57,130 --> 00:56:53,590

more people to feed

979

00:57:00,700 --> 00:56:57,140

any other comments well the risk of

980

00:57:02,230 --> 00:57:00,710

climate change is that it might become

981

00:57:04,300 --> 00:57:02,240

more difficult to feed the world's

982

00:57:07,060 --> 00:57:04,310

people because it will have effects on

983

00:57:10,410 --> 00:57:07,070

the hydrologic cycle animal plants also

984

00:57:16,420 --> 00:57:10,420

you know we are dominating the earth now

985

00:57:19,810 --> 00:57:16,430

I would say oh I want to say something

986

00:57:22,570 --> 00:57:19,820

about we can't afford to decrease

987

00:57:26,680 --> 00:57:22,580

emissions I was thinking about earlier

988

00:57:29,730 --> 00:57:26,690

in I mentioned Sweden as an example of a

989

00:57:33,550 --> 00:57:29,740

country that cut its emissions in half

990

00:57:35,770 --> 00:57:33,560

the per capita GDP of Sweden was

991

00:57:37,780 --> 00:57:35,780

slightly less than the u.s. when they

992

00:57:39,460 --> 00:57:37,790

started this effort and when they

993

00:57:42,070 --> 00:57:39,470

finished in twenty years later it was

994

00:57:45,370 --> 00:57:42,080

still slightly less the United States a

995

00:57:49,510 --> 00:57:45,380

drop in per capita GDP relative the u.s.

996

00:57:52,150 --> 00:57:49,520

simply did was not there so don't say

997

00:57:55,480 --> 00:57:52,160

that we can't afford it it's just how

998

00:57:57,339 --> 00:57:55,490

you do it we know how to do it well we

999

00:58:01,829 --> 00:57:57,349

can't do it by giving grants to

1000

00:58:04,000 --> 00:58:01,839

companies for solar energy that is not

1001  
00:58:07,329 --> 00:58:04,010  
economically feasible and that's what

1002  
00:58:09,940 --> 00:58:07,339  
we're doing we're given grants to to

1003  
00:58:14,200 --> 00:58:09,950  
purchase the equipment for people so

1004  
00:58:18,579 --> 00:58:14,210  
they don't have to do this can you

1005  
00:58:23,290 --> 00:58:18,589  
imagine how Congress would react to the

1006  
00:58:25,810 --> 00:58:23,300  
statement Sweden did it oh yeah I can

1007  
00:58:28,720 --> 00:58:25,820  
very well imagine that and Congress is

1008  
00:58:30,589 --> 00:58:28,730  
wrong yeah okay next question for the

1009  
00:58:32,539 --> 00:58:30,599  
audience

1010  
00:58:35,779 --> 00:58:32,549  
new technology I think is an important

1011  
00:58:37,519 --> 00:58:35,789  
issue in large the best predictor for

1012  
00:58:39,469 --> 00:58:37,529  
year-to-year climate variability which

1013  
00:58:41,660 --> 00:58:39,479

has real economic impacts is the status

1014

00:58:44,359 --> 00:58:41,670

of n so david has argued that he can

1015

00:58:51,289 --> 00:58:44,369

predict it years in advance and with new

1016

00:58:54,289 --> 00:58:51,299

technology I suggest all of you and you

1017

00:58:57,380 --> 00:58:54,299

will be too Osborn he one that would

1018

00:58:59,509 --> 00:58:57,390

correctly forecast the end so in 2009 no

1019

00:59:01,999 --> 00:58:59,519

one else forecasted I had a forecast two

1020

00:59:05,299 --> 00:59:02,009

years in advance I had this one forecast

1021

00:59:08,660 --> 00:59:05,309

right on Manolos also the Hurricane

1022

00:59:10,880 --> 00:59:08,670

Center was the Colorado State knocked

1023

00:59:12,739 --> 00:59:10,890

down the hurricane forecast of this year

1024

00:59:16,279 --> 00:59:12,749

cuz they expected to nen so this summer

1025

00:59:18,019 --> 00:59:16,289

I told dr. gray uh uh it's not coming

1026  
00:59:20,749 --> 00:59:18,029  
until Christmas now they're revising

1027  
00:59:22,729 --> 00:59:20,759  
their forecast again and so towards

1028  
00:59:24,890 --> 00:59:22,739  
Christmas and a very bad hurricane

1029  
00:59:29,229 --> 00:59:24,900  
season so yes I do have some great

1030  
00:59:35,709 --> 00:59:31,910  
it's more like Carmen's my name is Lou

1031  
00:59:39,370 --> 00:59:35,719  
Marin kovitch for thirty years I was a

1032  
00:59:41,359 --> 00:59:39,380  
paleontologist who specialized in the

1033  
00:59:44,140 --> 00:59:41,369  
environmental history of the Arctic

1034  
00:59:48,200 --> 00:59:44,150  
Ocean during the past 65 million years

1035  
00:59:50,029 --> 00:59:48,210  
and I've documented in my own research

1036  
00:59:52,479 --> 00:59:50,039  
published in really good journalists

1037  
00:59:55,130 --> 00:59:52,489  
like nature and science and so forth

1038  
00:59:57,499 --> 00:59:55,140

what the what the different climate were

1039

01:00:00,430 --> 00:59:57,509

warming's were or Cooling's over the

1040

01:00:02,530 --> 01:00:00,440

past 65 million years

1041

01:00:05,110 --> 01:00:02,540

so I have several comments so I'll make

1042

01:00:07,390 --> 01:00:05,120

them quick it's been said that there's a

1043

01:00:10,330 --> 01:00:07,400

95 percent or whatever confidence that

1044

01:00:11,950 --> 01:00:10,340

people affect the climate it's actually

1045

01:00:14,440 --> 01:00:11,960

not something that's subject to

1046

01:00:15,320 --> 01:00:14,450

probability either Schrodinger's cats

1047

01:00:17,100 --> 01:00:15,330

dead or alive

1048

01:00:21,070 --> 01:00:17,110

[Music]

1049

01:00:24,040 --> 01:00:21,080

number two somebody said that there

1050

01:00:27,610 --> 01:00:24,050

hasn't been this degree of warmth for

1051

01:00:29,620 --> 01:00:27,620

the past 5,000 years but there was an

1052

01:00:34,690 --> 01:00:29,630

episode called the Medieval Warm Period

1053

01:00:36,880 --> 01:00:34,700

from the 5th to the 10th centuries when

1054

01:00:39,100 --> 01:00:36,890

the climate was several degrees warmer

1055

01:00:42,210 --> 01:00:39,110

in the in the northern hemisphere where

1056

01:00:44,740 --> 01:00:42,220

it's this best documented and up to

1057

01:00:47,710 --> 01:00:44,750

75,000 Vikings were living on Greenland

1058

01:00:51,610 --> 01:00:47,720

which is just rocks and snow today so we

1059

01:00:53,620 --> 01:00:51,620

have 25 human generations that didn't

1060

01:00:57,970 --> 01:00:53,630

know they were living that there was

1061

01:01:01,090 --> 01:00:57,980

never going to get that warm again it's

1062

01:01:03,730 --> 01:01:01,100

not clear to me over the long term half

1063

01:01:05,890 --> 01:01:03,740

a billion years that co2 is even a

1064

01:01:08,770 --> 01:01:05,900

greenhouse gas for the following reasons

1065

01:01:11,740 --> 01:01:08,780

she'll fit geochemists have published a

1066

01:01:17,520 --> 01:01:11,750

myriad of papers documenting the climate

1067

01:01:21,970 --> 01:01:17,530

and co2 over the past half billion years

1068

01:01:25,090 --> 01:01:21,980

they use carbon isotopes from corals and

1069

01:01:29,170 --> 01:01:25,100

sea shells and other sea creatures as a

1070

01:01:34,230 --> 01:01:29,180

proxy for co2 and the use oxygen

1071

01:01:39,370 --> 01:01:34,240

isotopes oxygen 1864 a temperature proxy

1072

01:01:42,100 --> 01:01:39,380

so you can see big leaps in temperature

1073

01:01:46,000 --> 01:01:42,110

high or low and the big sweeping changes

1074

01:01:47,650 --> 01:01:46,010

in co2 and they don't correlate at least

1075

01:01:50,710 --> 01:01:47,660

for the last half billion years they

1076

01:01:53,650 --> 01:01:50,720

don't sometimes co2 is high during an

1077

01:01:56,740 --> 01:01:53,660

ice age say 200 million years ago

1078

01:01:59,089 --> 01:01:56,750

sometimes co2 is high and it's warm but

1079

01:02:02,329 --> 01:01:59,099

there's no consistent correlation at all

1080

01:02:06,739 --> 01:02:02,339

so it's not clear that over time a lot

1081

01:02:09,170 --> 01:02:06,749

of time co2 is even a greenhouse gas co2

1082

01:02:10,130 --> 01:02:09,180

values have been two to three times what

1083

01:02:12,620 --> 01:02:10,140

they are today

1084

01:02:17,299 --> 01:02:12,630

in the past including during cool

1085

01:02:19,279 --> 01:02:17,309

episodes around the world in the Vostok

1086

01:02:21,469 --> 01:02:19,289

cores that the Russians took in

1087

01:02:25,459 --> 01:02:21,479

Antarctica that goes back 400 thousand

1088

01:02:27,170 --> 01:02:25,469

years I believe mr. chilly had an

1089

01:02:29,900 --> 01:02:27,180

illustration of the graph he can see

1090

01:02:31,670 --> 01:02:29,910

climate getting warmer and colder warmer

1091

01:02:33,680 --> 01:02:31,680

colder ice ages happening and

1092

01:02:36,289 --> 01:02:33,690

interglacials inter inter ice ages

1093

01:02:41,209 --> 01:02:36,299

happening but the temperature always

1094

01:02:44,089 --> 01:02:41,219

goes up first up to 800 years before the

1095

01:02:46,430 --> 01:02:44,099

co2 goes up so indeed they both go up

1096

01:02:49,400 --> 01:02:46,440

but first the temperature does in every

1097

01:02:55,640 --> 01:02:49,410

single episode of warming spikes for the

1098

01:02:57,769 --> 01:02:55,650

last 400,000 years in Antarctica one end

1099

01:02:59,599 --> 01:02:57,779

the Milankovitch cycles since my last

1100

01:03:02,239 --> 01:02:59,609

name is Marin kovitch I know a lot about

1101

01:03:03,949 --> 01:03:02,249

this the Milankovitch cycles which are

1102

01:03:08,719 --> 01:03:03,959

sediment cycles the sediments deposited

1103

01:03:11,329 --> 01:03:08,729

in the ocean reflect warm and cold warm

1104

01:03:13,640 --> 01:03:11,339

and cold woman took cold over time at

1105

01:03:22,230 --> 01:03:13,650

the moment they're kicking into a cold

1106

01:04:08,180 --> 01:03:36,170

[Music]

1107

01:04:14,340 --> 01:04:11,790

reflecting a very local temperature not

1108

01:04:16,260 --> 01:04:14,350

a global what's been done is to put

1109

01:04:21,360 --> 01:04:16,270

together the global signal of

1110

01:04:30,810 --> 01:04:21,370

temperature temperature follows the co2

1111

01:04:34,770 --> 01:04:30,820

co2 rises and that was totally debunked

1112

01:04:43,860 --> 01:04:34,780

also yes it was well we're not gonna

1113

01:04:45,170 --> 01:04:43,870

totally debunked very quickly next

1114

01:04:50,130 --> 01:04:45,180

question from the audience

1115

01:04:52,860 --> 01:04:50,140

good evening I'm not an expert on the

1116

01:04:54,960 --> 01:04:52,870

subject but seems to me may be

1117

01:04:57,050 --> 01:04:54,970

incorrectly that the burning of fossil

1118

01:05:00,270 --> 01:04:57,060

fuels would release to the atmosphere

1119

01:05:03,030 --> 01:05:00,280

other chemicals decide co2 probably

1120

01:05:05,010 --> 01:05:03,040

unwanted chemicals and even

1121

01:05:08,040 --> 01:05:05,020

if this isn't correct there are other

1122

01:05:10,680 --> 01:05:08,050

factors like the Peak Oil phenomena

1123

01:05:14,460 --> 01:05:10,690

there was this year of paper published

1124

01:05:17,370 --> 01:05:14,470

in Nature which remember sack the title

1125

01:05:19,140 --> 01:05:17,380

but paraphrasing it basically concluded

1126

01:05:22,380 --> 01:05:19,150

that we are definitely right now in Peak

1127

01:05:25,730 --> 01:05:22,390

Oil considering this considering the

1128

01:05:30,530 --> 01:05:25,740

fact that we are now looking to drill in

1129

01:05:32,940 --> 01:05:30,540

areas where it has sensible ecosystems

1130

01:05:36,360 --> 01:05:32,950

and if I had more times I probably could

1131

01:05:39,410 --> 01:05:36,370

come up with several more reasons why we

1132

01:05:42,030 --> 01:05:39,420

should move away from fossil fuels so

1133

01:05:43,770 --> 01:05:42,040

even if fossil fuels the burning of

1134

01:05:47,250 --> 01:05:43,780

fossil fuels has nothing to do with the

1135

01:05:49,410 --> 01:05:47,260

global warming there's probably a large

1136

01:05:51,570 --> 01:05:49,420

list of reasons of why we should move

1137

01:05:52,890 --> 01:05:51,580

away from fossil fuels and I would like

1138

01:05:55,710 --> 01:05:52,900

to hear the comments of the panel on

1139

01:05:57,480 --> 01:05:55,720

this we also have a pretty large list

1140

01:06:01,830 --> 01:05:57,490

why we should be moving away from wind

1141

01:06:04,020 --> 01:06:01,840

power they kill an enormous amount of

1142

01:06:07,680 --> 01:06:04,030

birds one thing and they're also putting

1143

01:06:11,070 --> 01:06:07,690

out a low-frequency noise there's a

1144

01:06:14,130 --> 01:06:11,080

study being done up in Maine from sound

1145

01:06:17,310 --> 01:06:14,140

acoustic engineers they were performing

1146

01:06:19,950 --> 01:06:17,320

some work beside a large wind turbine

1147

01:06:21,630 --> 01:06:19,960

and they're in this house for about

1148

01:06:25,320 --> 01:06:21,640

three or four days and they started to

1149

01:06:29,250 --> 01:06:25,330

get sick feeling just horrible they

1150

01:06:30,900 --> 01:06:29,260

couldn't understand why so a few days

1151

01:06:34,410 --> 01:06:30,910

later they had to leave to go to an

1152

01:06:37,980 --> 01:06:34,420

another job and they felt better then

1153

01:06:40,380 --> 01:06:37,990

they came back and within a day after

1154

01:06:42,030 --> 01:06:40,390

getting back to that research point

1155

01:06:44,630 --> 01:06:42,040

where the wind turbine was they started

1156

01:06:47,670 --> 01:06:44,640

to feel very ill again business

1157

01:06:49,560 --> 01:06:47,680

confusion and they're writing a paper

1158

01:06:52,200 --> 01:06:49,570

right now they have found out that the

1159

01:06:54,930 --> 01:06:52,210

wind turbines give off a low-frequency

1160

01:06:56,970 --> 01:06:54,940

noise we can't hear it comes into the

1161

01:07:01,320 --> 01:06:56,980

house and what they have is motion

1162

01:07:03,330 --> 01:07:01,330

sickness from a wind turbines now the

1163

01:07:05,880 --> 01:07:03,340

motion sickness it's probably about a

1164

01:07:08,010 --> 01:07:05,890

five mile radius of a wind turbines

1165

01:07:10,530 --> 01:07:08,020

which means you have to put up a huge

1166

01:07:12,900 --> 01:07:10,540

buffer zone but this is what's going to

1167

01:07:13,570 --> 01:07:12,910

happen in the future a very huge buffer

1168

01:07:16,000 --> 01:07:13,580

zone for

1169

01:07:19,420 --> 01:07:16,010

wind turbines among that are also

1170

01:07:22,120 --> 01:07:19,430

killing bats and bald eagles and many

1171

01:07:23,650 --> 01:07:22,130

other species that's very interesting

1172

01:07:26,440 --> 01:07:23,660

but I'm not proposing to move towards

1173

01:07:31,080 --> 01:07:26,450

wind energy but that's an alternative

1174

01:07:36,160 --> 01:07:33,730

something about the birds the early

1175

01:07:39,840 --> 01:07:36,170

generation that wind turbines actually

1176  
01:07:44,710 --> 01:07:39,850  
killed birds because the structure

1177  
01:07:47,050 --> 01:07:44,720  
invited birds to nest there so one big

1178  
01:07:49,780 --> 01:07:47,060  
advance was actually to make a smooth

1179  
01:07:53,190 --> 01:07:49,790  
tower but it didn't give a place for

1180  
01:07:56,080 --> 01:07:53,200  
birds to sit and build a nest that

1181  
01:07:58,090 --> 01:07:56,090  
decreased the bird kill by an enormous

1182  
01:08:00,010 --> 01:07:58,100  
factor I don't know what the numbers are

1183  
01:08:01,810 --> 01:08:00,020  
right now but that was actually some a

1184  
01:08:04,090 --> 01:08:01,820  
lesson that had to be learned well they

1185  
01:08:06,520 --> 01:08:04,100  
have an island and main words already

1186  
01:08:09,640 --> 01:08:06,530  
killed five by bald eagles in the past

1187  
01:08:12,940 --> 01:08:09,650  
year and if we went out and shot one we

1188  
01:08:16,690 --> 01:08:12,950

would be in jail there's something about

1189

01:08:20,680 --> 01:08:16,700

coal yeah so you are in favor of coal it

1190

01:08:23,050 --> 01:08:20,690

seems never mentioned coal

1191

01:08:35,770 --> 01:08:23,060

never mentioned coal we were talking

1192

01:08:39,130 --> 01:08:35,780

about wind turbines I York a couple of

1193

01:08:43,510 --> 01:08:39,140

brief remarks first I wanted to express

1194

01:08:45,940 --> 01:08:43,520

my extreme disappointment at learning

1195

01:08:47,950 --> 01:08:45,950

that dr. Miller had declined to allow

1196

01:08:50,770 --> 01:08:47,960

his talk to be recorded because I

1197

01:08:53,170 --> 01:08:50,780

thought it was a very good presentation

1198

01:08:53,999 --> 01:08:53,180

and certainly deserved to be archived

1199

01:09:03,030 --> 01:08:54,009

and

1200

01:09:06,059 --> 01:09:03,040

actual question but it was rather driven

1201  
01:09:09,450 --> 01:09:06,069  
out of my head by my shock at hearing

1202  
01:09:12,650 --> 01:09:09,460  
one of the panelists invoke God as the

1203  
01:09:15,780 --> 01:09:12,660  
creator of the world for a basis for

1204  
01:09:17,789 --> 01:09:15,790  
considering that things are okay and we

1205  
01:09:19,950 --> 01:09:17,799  
shouldn't meddle with them that is a

1206  
01:09:22,979 --> 01:09:19,960  
perfectly legitimate theological

1207  
01:09:29,070 --> 01:09:22,989  
position but it is simply fraud to pass

1208  
01:09:30,800 --> 01:09:29,080  
it off as science anybody on the panel

1209  
01:09:46,710 --> 01:09:30,810  
[Applause]

1210  
01:09:46,720 --> 01:09:57,500  
[Music]

1211  
01:10:03,030 --> 01:10:00,210  
yeah I I agree with you if you want to

1212  
01:10:05,340 --> 01:10:03,040  
if you submit something to journal like

1213  
01:10:06,810 --> 01:10:05,350

nature or science and they find out that

1214

01:10:10,200 --> 01:10:06,820

you it's already published somewhere

1215

01:10:12,360 --> 01:10:10,210

they will not accept it next question

1216

01:10:14,640 --> 01:10:12,370

this is a question in a bit of a

1217

01:10:18,300 --> 01:10:14,650

suggestion dress two the two scientists

1218

01:10:21,680 --> 01:10:18,310

on the left do you think that perhaps we

1219

01:10:24,960 --> 01:10:21,690

made a slight blunder in calling it

1220

01:10:27,360 --> 01:10:24,970

global warming because people think in

1221

01:10:29,370 --> 01:10:27,370

terms of temperature and what I'm

1222

01:10:32,010 --> 01:10:29,380

thinking is that it's the real problem

1223

01:10:34,710 --> 01:10:32,020

is global heating it is a capture of

1224

01:10:36,330 --> 01:10:34,720

heat in the system that then has to be

1225

01:10:39,479 --> 01:10:36,340

released to space through various

1226

01:10:41,610 --> 01:10:39,489

different mechanisms and a one or two

1227

01:10:43,350 --> 01:10:41,620

degree increase in temperature doesn't

1228

01:10:45,750 --> 01:10:43,360

excite the public and doesn't compute

1229

01:10:48,360 --> 01:10:45,760

very well with politicians but when you

1230

01:10:53,729 --> 01:10:48,370

start talking about what he does that's

1231

01:10:55,950 --> 01:10:53,739

a different story he he puts more energy

1232

01:10:58,830 --> 01:10:55,960

in the atmosphere that's exactly what

1233

01:11:00,270 --> 01:10:58,840

happens more water so there's currently

1234

01:11:02,970 --> 01:11:00,280

more water vapor in the atmosphere than

1235

01:11:06,210 --> 01:11:02,980

there was before as 30 years ago

1236

01:11:08,280 --> 01:11:06,220

that translates to energy and the

1237

01:11:41,010 --> 01:11:08,290

expectation as a result of that is of

1238

01:11:43,560 --> 01:11:41,020

more weather extremes question was a

1239

01:11:46,260 --> 01:11:43,570

semantic one would it have been better

1240

01:11:49,050 --> 01:11:46,270

to call it heating rather than warming

1241

01:11:52,020 --> 01:11:49,060

would that be more effective what I've

1242

01:11:55,770 --> 01:11:52,030

been interested in is that more and more

1243

01:12:00,450 --> 01:11:55,780

frequently the talk is about climate

1244

01:12:02,580 --> 01:12:00,460

change which is non falsifiable instead

1245

01:12:06,540 --> 01:12:02,590

of talking about human-caused global

1246

01:12:09,780 --> 01:12:06,550

warming which is potentially falsifiable

1247

01:12:13,290 --> 01:12:09,790

I certainly agree with Steven Holl from

1248

01:12:15,270 --> 01:12:13,300

Orlando Florida Freeman Dyson who I'm

1249

01:12:18,060 --> 01:12:15,280

sure you all know is great scientist one

1250

01:12:21,780 --> 01:12:18,070

of the criticisms he has had and others

1251

01:12:24,960 --> 01:12:21,790

as well is about climate models the

1252

01:12:26,970 --> 01:12:24,970

computer models which he's criticized

1253

01:12:29,940 --> 01:12:26,980

them is simply not being complete not

1254

01:12:31,680 --> 01:12:29,950

having all the variables available and

1255

01:12:33,780 --> 01:12:31,690

much of the climate research and

1256

01:12:36,390 --> 01:12:33,790

forecasting is based on those computer

1257

01:12:38,700 --> 01:12:36,400

models so I would like to get each of

1258

01:12:42,990 --> 01:12:38,710

you to comment on that I agree with that

1259

01:12:45,840 --> 01:12:43,000

I I refrain from a prediction all I'm

1260

01:12:48,240 --> 01:12:45,850

saying is we run a great risk because

1261

01:12:51,600 --> 01:12:48,250

there's a flipside to us not being able

1262

01:12:55,170 --> 01:12:51,610

to make a good prediction there's a very

1263

01:12:57,120 --> 01:12:55,180

large range in the predicted aspects of

1264

01:12:58,680 --> 01:12:57,130

climate change by computer models for

1265

01:13:00,240 --> 01:12:58,690

good reasons because we do not

1266

01:13:02,760 --> 01:13:00,250

understand these feedbacks well enough

1267

01:13:06,150 --> 01:13:02,770

but that's at the same time tells us

1268

01:13:07,770 --> 01:13:06,160

that we're in a risky business because

1269

01:13:09,780 --> 01:13:07,780

none of these parameter is Asians that

1270

01:13:13,060 --> 01:13:09,790

give these more extreme predictions

1271

01:13:18,040 --> 01:13:13,070

r-rahman stably idiotic they seem

1272

01:13:21,340 --> 01:13:18,050

reasonable one thing we must remember is

1273

01:13:23,800 --> 01:13:21,350

water vapors 96 percent of the

1274

01:13:28,120 --> 01:13:23,810

greenhouse gases and everyone's ignoring

1275

01:13:29,020 --> 01:13:28,130

water vapor which and also then why are

1276

01:13:33,670 --> 01:13:29,030

we arguing about

1277

01:13:37,600 --> 01:13:33,680

only co2 water vapor is 96 percent of

1278

01:13:40,150 --> 01:13:37,610

the greenhouse gas and it also varies as

1279

01:13:43,060 --> 01:13:40,160

we warm we also get warm water vapor in

1280

01:13:46,840 --> 01:13:43,070

the air causing greenhouse gas causing

1281

01:13:49,240 --> 01:13:46,850

trap interfere about warm air that's a

1282

01:13:51,670 --> 01:13:49,250

positive feedback that's right now as

1283

01:13:53,500 --> 01:13:51,680

far as the IPCC models and other models

1284

01:13:56,020 --> 01:13:53,510

they are only as good as the information

1285

01:13:57,820 --> 01:13:56,030

put in imported bottles

1286

01:14:00,670 --> 01:13:57,830

you have to have good information to put

1287

01:14:03,910 --> 01:14:00,680

into the models this is why the IPCC

1288

01:14:05,950 --> 01:14:03,920

forecast back 10 years ago was totally

1289

01:14:07,570 --> 01:14:05,960

wrong and they had to revise it just a

1290

01:14:10,240 --> 01:14:07,580

few years after that actually they've

1291

01:14:13,360 --> 01:14:10,250

realized their forecasts about three

1292

01:14:14,680 --> 01:14:13,370

times already and I'm not revising my

1293

01:14:17,290 --> 01:14:14,690

forecasts at all

1294

01:14:19,320 --> 01:14:17,300

and remember pretend your cycles a

1295

01:14:22,210 --> 01:14:19,330

10-year warm periods we're talking about

1296

01:14:24,340 --> 01:14:22,220

in the 1930s and now but the signature

1297

01:14:26,470 --> 01:14:24,350

on all the global warming cycles we're

1298

01:14:28,990 --> 01:14:26,480

coming at the end of that cycle right

1299

01:14:31,120 --> 01:14:29,000

now and people trying to debunk this but

1300

01:14:34,390 --> 01:14:31,130

we haven't even gotten out of the cycle

1301

01:14:36,700 --> 01:14:34,400

yet to head into this you have to look

1302

01:14:38,650 --> 01:14:36,710

at this and take care of it because

1303

01:14:41,260 --> 01:14:38,660

remember I told you about very sharp

1304

01:14:44,020 --> 01:14:41,270

global cooling coming in very sharp

1305

01:14:47,440 --> 01:14:44,030

which would be extremely dangerous for

1306

01:14:51,310 --> 01:14:47,450

people here on earth where our food

1307

01:14:53,110 --> 01:14:51,320

supplies and if we don't heed warning on

1308

01:14:55,120 --> 01:14:53,120

this and I'm not the only one saying is

1309

01:14:55,600 --> 01:14:55,130

there are many scientists throughout the

1310

01:14:58,600 --> 01:14:55,610

world

1311

01:15:01,090 --> 01:14:58,610

starting to step forward on this now and

1312

01:15:04,750 --> 01:15:01,100

we can't get our voices because of the

1313

01:15:07,510 --> 01:15:04,760

media and we need to have people look at

1314

01:15:10,540 --> 01:15:07,520

both sides of the situation and not just

1315

01:15:12,760 --> 01:15:10,550

go to one view we have to look at both

1316

01:15:18,220 --> 01:15:12,770

of them and it's not being done okay

1317

01:15:23,500 --> 01:15:21,370

a few I guess philosophical comments

1318

01:15:26,770 --> 01:15:23,510

here and maybe it'll ultimately lead

1319

01:15:28,720 --> 01:15:26,780

into a question or two but what I find

1320

01:15:30,490 --> 01:15:28,730

interesting here this is the first time

1321

01:15:33,280 --> 01:15:30,500

I've attended one of these kind of one

1322

01:15:36,729 --> 01:15:33,290

of these conferences is that we we have

1323

01:15:38,680 --> 01:15:36,739

within our panel the same kind of

1324

01:15:42,130 --> 01:15:38,690

division and from what I've observed

1325

01:15:45,460 --> 01:15:42,140

here quite frankly acrimony related to

1326

01:15:47,680 --> 01:15:45,470

this issue that I've observed and I have

1327

01:15:50,410 --> 01:15:47,690

to admit I'm not a regular reader of the

1328

01:15:53,470 --> 01:15:50,420

more erudite magazines like nature and

1329

01:15:55,660 --> 01:15:53,480

so forth my my band tends to be more

1330

01:15:58,810 --> 01:15:55,670

engineering related so I read magazines

1331

01:16:00,550 --> 01:15:58,820

like chemical and engineering news which

1332

01:16:03,580 --> 01:16:00,560

is publication of the American Chemical

1333

01:16:08,350 --> 01:16:03,590

Society physics today which of course is

1334

01:16:11,680 --> 01:16:08,360

the American physics society and also

1335

01:16:13,810 --> 01:16:11,690

maybe a little bit lower brow magazines

1336

01:16:16,720 --> 01:16:13,820

like popular science and Popular

1337

01:16:20,740 --> 01:16:16,730

Mechanics but the thing that strike me

1338

01:16:23,110 --> 01:16:20,750

man I've seen this same type of very

1339

01:16:24,880 --> 01:16:23,120

vigorous discussion going on really over

1340

01:16:27,940 --> 01:16:24,890

the last few years in the editorial

1341

01:16:31,000 --> 01:16:27,950

columns of chemical and engineering news

1342

01:16:33,190 --> 01:16:31,010

physics today exactly the same kinds of

1343

01:16:36,940 --> 01:16:33,200

things that are being debated here and

1344

01:16:38,979 --> 01:16:36,950

so it's a very active and I would have

1345

01:16:41,260 --> 01:16:38,989

to say very polarized type of debate

1346

01:16:44,170 --> 01:16:41,270

already at this point which i think is

1347

01:16:46,870 --> 01:16:44,180

coming out very starkly here which i

1348

01:16:49,630 --> 01:16:46,880

think is unfortunate in many ways but

1349

01:16:52,420 --> 01:16:49,640

the other comment I will make which kind

1350

01:16:54,880 --> 01:16:52,430

of I think steps back and looks at this

1351  
01:16:56,950 --> 01:16:54,890  
from a much broader perspective if one

1352  
01:16:58,870 --> 01:16:56,960  
looks at some of the more recent

1353  
01:17:01,720 --> 01:16:58,880  
articles I think it's in Popular

1354  
01:17:05,500 --> 01:17:01,730  
Mechanics or it's in popular science

1355  
01:17:07,600 --> 01:17:05,510  
where a one of the they show us spread

1356  
01:17:10,420 --> 01:17:07,610  
and questions have come up here about

1357  
01:17:13,150 --> 01:17:10,430  
fossil fuels for example but they show

1358  
01:17:14,950 --> 01:17:13,160  
us spread on just exactly you know that

1359  
01:17:16,370 --> 01:17:14,960  
basically the title of the article is

1360  
01:17:19,190 --> 01:17:16,380  
whether or not

1361  
01:17:20,780 --> 01:17:19,200  
mmm additional drilling in the US for

1362  
01:17:22,880 --> 01:17:20,790  
example could make up for the shortfall

1363  
01:17:26,540 --> 01:17:22,890

of oil and I think that one of the

1364

01:17:31,550 --> 01:17:26,550

contest's re on the panel members

1365

01:17:33,980 --> 01:17:31,560

mentioned this mentioned this that about

1366

01:17:36,650 --> 01:17:33,990

about the about the global oil supply

1367

01:17:38,990 --> 01:17:36,660

and so forth peaking the peak oil supply

1368

01:17:42,260 --> 01:17:39,000

actually being predicted by like log

1369

01:17:44,420 --> 01:17:42,270

very reliable logarithmic models and the

1370

01:17:46,790 --> 01:17:44,430

in the end the production in the US for

1371

01:17:49,580 --> 01:17:46,800

example for oil was predicted to peak

1372

01:17:51,950 --> 01:17:49,590

sometime in the late or mid 1970s which

1373

01:17:55,040 --> 01:17:51,960

is exactly what it did and now we're in

1374

01:17:58,070 --> 01:17:55,050

that same sort of predictive mode for

1375

01:18:00,860 --> 01:17:58,080

for for world oil but but back to the

1376

01:18:03,110 --> 01:18:00,870

the point relative to to US demand

1377

01:18:06,080 --> 01:18:03,120

versus production if you look at that

1378

01:18:08,750 --> 01:18:06,090

layout and that spread the U the the

1379

01:18:10,970 --> 01:18:08,760

production of US oil can only make up

1380

01:18:13,430 --> 01:18:10,980

maybe a third to a half of the total

1381

01:18:17,330 --> 01:18:13,440

demand in the United States so there's

1382

01:18:19,430 --> 01:18:17,340

absolutely no way that drilling I mean

1383

01:18:22,040 --> 01:18:19,440

with one looks at that the drilling in

1384

01:18:25,220 --> 01:18:22,050

nature in our domestic resources can

1385

01:18:27,410 --> 01:18:25,230

make that up the final so as an overall

1386

01:18:30,320 --> 01:18:27,420

perspective on oil

1387

01:18:33,290 --> 01:18:30,330

that's a mm-hmm that's a point but one

1388

01:18:35,560 --> 01:18:33,300

other thing here that may not people

1389

01:18:39,230 --> 01:18:35,570

here may not be as aware of is that

1390

01:18:41,240 --> 01:18:39,240

actually II the chemical industry in the

1391

01:18:44,480 --> 01:18:41,250

US is enjoying somewhat of a boom

1392

01:18:46,400 --> 01:18:44,490

because of this fracking the fracking

1393

01:18:50,359 --> 01:18:46,410

operations that are going on with

1394

01:18:53,780 --> 01:18:50,369

natural gas and the fact that the E

1395

01:18:55,850 --> 01:18:53,790

the cost of the feedstocks for natural

1396

01:18:57,439 --> 01:18:55,860

gas is so much lower than that for oil

1397

01:18:59,870 --> 01:18:57,449

so it's actually giving them a

1398

01:19:04,010 --> 01:18:59,880

competitive advantage now all right

1399

01:19:05,750 --> 01:19:04,020

however as has been pointed out and I

1400

01:19:07,430 --> 01:19:05,760

didn't hear any of the panelists mention

1401

01:19:10,459 --> 01:19:07,440

this I heard water mentioned and of

1402

01:19:12,859 --> 01:19:10,469

course co2 but methane which is being

1403

01:19:13,810 --> 01:19:12,869

released by these fractions are back

1404

01:19:17,359 --> 01:19:13,820

there

1405

01:19:20,870 --> 01:19:17,369

sorry fracking operations is actually

1406

01:19:23,330 --> 01:19:20,880

even more potent greenhouse gas than co2

1407

01:19:25,939 --> 01:19:23,340

so if somebody wants to make a comment

1408

01:19:29,000 --> 01:19:25,949

about that yeah we're actually making

1409

01:19:32,089 --> 01:19:29,010

measurements both upwind and downwind of

1410

01:19:35,629 --> 01:19:32,099

gas fields where a fracking takes place

1411

01:19:39,020 --> 01:19:35,639

and we can see a very significant

1412

01:19:44,859 --> 01:19:39,030

enhancement in methane downwind of these

1413

01:19:49,339 --> 01:19:44,869

fracking operations larger than expected

1414

01:19:52,700 --> 01:19:49,349

a good number we don't have yet but in a

1415

01:19:55,459 --> 01:19:52,710

couple of months maybe anybody else want

1416

01:19:59,720 --> 01:19:55,469

to comment on that there was a report

1417

01:20:03,550 --> 01:19:59,730

that an estimate that Australia in

1418

01:20:07,250 --> 01:20:03,560

Australia 13% of the greenhouse gas

1419

01:20:12,050 --> 01:20:07,260

effect being produced comes from the

1420

01:20:15,050 --> 01:20:12,060

gases released by living cattle yeah so

1421

01:20:17,060 --> 01:20:15,060

we've known these for decades okay

1422

01:20:19,160 --> 01:20:17,070

we're getting near the end of the

1423

01:20:22,399 --> 01:20:19,170

session we're going to have these two

1424

01:20:25,640 --> 01:20:22,409

speakers ask questions and that's going

1425

01:20:27,910 --> 01:20:25,650

to be it so just sitting back watching

1426

01:20:32,530 --> 01:20:27,920

this there there's been

1427

01:20:36,640 --> 01:20:32,540

a fair bit of acrimony some snickering

1428

01:20:42,000 --> 01:20:36,650

and but then in the end of it what

1429

01:20:44,979 --> 01:20:42,010

really matters are the facts and so one

1430

01:20:47,020 --> 01:20:44,989

question that wasn't it isn't resolved

1431

01:20:50,250 --> 01:20:47,030

in my mind and excuse me for not

1432

01:20:52,660 --> 01:20:50,260

remembering your names the sort of anti

1433

01:20:57,660 --> 01:20:52,670

anthropogenic gentleman in the black

1434

01:21:00,870 --> 01:20:57,670

suit mentioned the the large fluctuated

1435

01:21:04,600 --> 01:21:00,880

mentioned the the large fluctuations

1436

01:21:07,360 --> 01:21:04,610

over a long period of time and the

1437

01:21:12,240 --> 01:21:07,370

gentleman on the far left mentioned that

1438

01:21:15,040 --> 01:21:12,250

even taking those into account the the

1439

01:21:18,280 --> 01:21:15,050

warming that we're seeing right now far

1440

01:21:19,930 --> 01:21:18,290

exceeds that and so that's something

1441

01:21:23,320 --> 01:21:19,940

that where we could just look at some

1442

01:21:27,220 --> 01:21:23,330

data and pretty well resolve it and so

1443

01:21:28,660 --> 01:21:27,230

that sort of thing seems what it would

1444

01:21:34,150 --> 01:21:28,670

seem to be helpful to me another issue

1445

01:21:35,979 --> 01:21:34,160

was Henry mentioned the warming within

1446

01:21:39,459 --> 01:21:35,989

the earth that there's evidence from

1447

01:21:40,870 --> 01:21:39,469

deep mines and so on what sort of data

1448

01:21:44,350 --> 01:21:40,880

is there

1449

01:21:48,160 --> 01:21:44,360

I guess it seems like there are a few

1450

01:21:50,709 --> 01:21:48,170

very relevant things that look to me

1451

01:21:53,680 --> 01:21:50,719

like they we have enough data to answer

1452

01:21:56,830 --> 01:21:53,690

these these factual questions to get us

1453

01:21:59,229 --> 01:21:56,840

there am I wrong

1454

01:22:02,379 --> 01:21:59,239

are you what is he wrong did we have

1455

01:22:04,140 --> 01:22:02,389

enough data if you contact me right

1456

01:22:07,120 --> 01:22:04,150

after this I'll show you on my laptop

1457

01:22:10,720 --> 01:22:07,130

the 1500 years cycles on temperatures

1458

01:22:13,660 --> 01:22:10,730

were we were indeed warmer 5,000 years

1459

01:22:16,600 --> 01:22:13,670

ago oven today and indeed 1,000 years

1460

01:22:19,120 --> 01:22:16,610

ago as warm or warmer than today Ahmet

1461

01:22:21,820 --> 01:22:19,130

let's take another fact we even talked

1462

01:22:23,500 --> 01:22:21,830

about that up in the green Greenland the

1463

01:22:25,780 --> 01:22:23,510

Vikings a thousand years ago that's

1464

01:22:27,070 --> 01:22:25,790

common knowledge that they settled up

1465

01:22:29,859 --> 01:22:27,080

there a thousand years ago and they

1466

01:22:32,260 --> 01:22:29,869

could dig down four feet four to five

1467

01:22:33,459 --> 01:22:32,270

feet I think four graves to bury their

1468

01:22:35,050 --> 01:22:33,469

dead and then they had to move out of

1469

01:22:38,260 --> 01:22:35,060

there once cool but cooling started

1470

01:22:42,010 --> 01:22:38,270

coming back in it's very known and

1471

01:22:43,810 --> 01:22:42,020

remember 50% less ice six five thousand

1472

01:22:47,680 --> 01:22:43,820

years ago but I'll show you about data

1473

01:22:56,480 --> 01:22:47,690

on my laptop right after the talk here

1474

01:22:56,490 --> 01:23:13,560

[Music]

1475

01:23:24,790 --> 01:23:17,919

the data that different sides on this

1476

01:23:26,200 --> 01:23:24,800

issue focus on is not the same another

1477

01:23:29,950 --> 01:23:26,210

question from the audience and then

1478

01:23:31,720 --> 01:23:29,960

we'll bring it to an end

1479

01:23:34,630 --> 01:23:31,730

so this is a little bit different

1480

01:23:36,040 --> 01:23:34,640

actually which might be good on the

1481

01:23:37,420 --> 01:23:36,050

topic of clean energy if we're just

1482

01:23:38,890 --> 01:23:37,430

gonna talk about clean energy whenever

1483

01:23:40,510 --> 01:23:38,900

we have a debate about that in this

1484

01:23:42,010 --> 01:23:40,520

country it seems like there are

1485

01:23:43,780 --> 01:23:42,020

proponents of it that jump on board and

1486

01:23:45,070 --> 01:23:43,790

say well yeah I totally believe in clean

1487

01:23:48,250 --> 01:23:45,080

energy that sounds great

1488

01:23:49,240 --> 01:23:48,260

it should be clean coal and it seems

1489

01:23:50,590 --> 01:23:49,250

like they're saying that probably

1490

01:23:52,090 --> 01:23:50,600

because they have investment in clean

1491

01:23:53,740 --> 01:23:52,100

coal and they have a selfish motivation

1492

01:23:55,840 --> 01:23:53,750

for that or you have people who jump on

1493

01:23:57,580 --> 01:23:55,850

board and say and then you find out that

1494

01:23:59,770 --> 01:23:57,590

they're invested in in nuclear or

1495

01:24:01,480 --> 01:23:59,780

whatever how can we get around the

1496

01:24:03,730 --> 01:24:01,490

selfish motivation of people who want to

1497

01:24:05,770 --> 01:24:03,740

make money off of this process and just

1498

01:24:08,350 --> 01:24:05,780

talk about instead of jumping on

1499

01:24:10,030 --> 01:24:08,360

specific solutions talking about it

1500

01:24:12,250 --> 01:24:10,040

without that selfish piece in there do

1501

01:24:13,870 --> 01:24:12,260

you understand the question I I don't

1502

01:24:18,970 --> 01:24:13,880

have a personal interests in any

1503

01:24:22,750 --> 01:24:18,980

particular energy solution yeah I don't

1504

01:24:25,450 --> 01:24:22,760

like the answer this one I spoke about

1505

01:24:27,640 --> 01:24:25,460

the grant system around the world Europe

1506

01:24:31,090 --> 01:24:27,650

and the United States about the

1507

01:24:35,520 --> 01:24:31,100

manipulation of the grant system for the

1508

01:24:39,730 --> 01:24:35,530

global warming effort the government

1509

01:24:42,940 --> 01:24:39,740

provides a grant that's a political my

1510

01:24:47,410 --> 01:24:42,950

research I'm not funding funded by

1511

01:24:53,070 --> 01:24:47,420

anyone no one at all and this is the

1512

01:24:55,780 --> 01:24:53,080

difference this is real research would I

1513

01:24:57,550 --> 01:24:55,790

when I started it I didn't know how was

1514

01:24:59,230 --> 01:24:57,560

gonna come out and it came out financial

1515

01:25:01,060 --> 01:24:59,240

cycles and showing what's gonna be

1516

01:25:04,060 --> 01:25:01,070

happening in the future and I'm not

1517

01:25:04,870 --> 01:25:04,070

tended by any energy companies any

1518

01:25:09,980 --> 01:25:04,880

governments

1519

01:25:13,020 --> 01:25:09,990

it's just unbiased oh you are implying

1520

01:25:15,910 --> 01:25:13,030

[Music]

1521

01:25:18,790 --> 01:25:15,920

because you're getting you're getting

1522

01:25:21,370 --> 01:25:18,800

paid for it the opposite is true as a

1523

01:25:23,230 --> 01:25:21,380

student I became interested in the issue

1524

01:25:25,840 --> 01:25:23,240

because I thought this is going to be an

1525

01:25:29,110 --> 01:25:25,850

important problem I could have made a

1526

01:25:31,270 --> 01:25:29,120

lot more money personally if I had

1527

01:25:31,930 --> 01:25:31,280

stayed in solid state physics which I

1528

01:25:34,060 --> 01:25:31,940

was doing at

1529

01:25:37,390 --> 01:25:34,070

the time what L saying is you're getting

1530

01:25:39,250 --> 01:25:37,400

paid by a political entity that has has

1531

01:25:42,100 --> 01:25:39,260

their feet in theirs I'm getting paid by

1532

01:25:44,320 --> 01:25:42,110

no one great importance to society and

1533

01:25:46,450 --> 01:25:44,330

I'm glad governments want to invest in

1534

01:25:48,459 --> 01:25:46,460

investigating this issue they would be

1535

01:25:49,990 --> 01:25:48,469

shirking their responsibility if they

1536

01:25:55,360 --> 01:25:50,000

didn't but it's the government setting

1537

01:25:57,520 --> 01:25:55,370

up the policies in the grants well it's

1538

01:25:59,320 --> 01:25:57,530

true that the scientists at the

1539

01:26:02,560 --> 01:25:59,330

University of receiving grants from the

1540

01:26:06,070 --> 01:26:02,570

government my experience is that they

1541

01:26:07,959 --> 01:26:06,080

send in a grant proposal and then

1542

01:26:10,390 --> 01:26:07,969

probably do something different than

1543

01:26:13,660 --> 01:26:10,400

what the grant proposal said that

1544

01:26:15,610 --> 01:26:13,670

happens you were writing books and I

1545

01:26:19,630 --> 01:26:15,620

assume you're selling those books and so

1546

01:26:21,970 --> 01:26:19,640

you're pushing your position we all do

1547

01:26:25,290 --> 01:26:21,980

that we can't avoid it I will say this

1548

01:26:28,030 --> 01:26:25,300

about the discussion this evening I

1549

01:26:31,330 --> 01:26:28,040

gather from this morning and this

1550

01:26:35,590 --> 01:26:31,340

evening that both sides of the issue

1551  
01:26:39,459 --> 01:26:35,600  
agree that at the moment the situation

1552  
01:26:40,560 --> 01:26:39,469  
is warming some agree that it's going to

1553  
01:26:43,930 --> 01:26:40,570  
continue to warm

1554  
01:26:46,479 --> 01:26:43,940  
some say it's going to cool and I am

1555  
01:26:48,880 --> 01:26:46,489  
very happy to hear that there was a very

1556  
01:26:53,170 --> 01:26:48,890  
definite prediction made that by

1557  
01:26:56,260 --> 01:26:53,180  
something around 2 times 20 22 23

1558  
01:26:59,170 --> 01:26:56,270  
somewhere there 2018 well that's was

1559  
01:27:02,740 --> 01:26:59,180  
again and but ok so within the next 20

1560  
01:27:04,150 --> 01:27:02,750  
years or so 10 years or so either it's

1561  
01:27:08,400 --> 01:27:04,160  
going to be cool or it's going to be

1562  
01:27:11,560 --> 01:27:08,410  
hotter and whichever it is will tell us

1563  
01:27:13,510 --> 01:27:11,570

the answer to this debate and I suspect

1564

01:27:16,090 --> 01:27:13,520

that it's not going to matter a lot that

1565

01:27:18,040 --> 01:27:16,100

10 years whether we've started to invest

1566

01:27:20,260 --> 01:27:18,050

in extra dikes in Holland or whether we

1567

01:27:21,729 --> 01:27:20,270

haven't I want to thank our panel

1568

01:27:25,230 --> 01:27:21,739

they've done a very good job and I

1569

01:27:26,130 --> 01:27:25,240

appreciate it thank you for being here