good morning welcome to all of you here
today it's an honor to be here to recognize the great contributions of Eugene Parker whose brilliant work revolutionized our understanding of the heliosphere my name is rocky Cobb I'm Dean of the physical sciences at the University of Chicago and a professor in the Department of astronomy and astrophysics it's my privilege to welcome our distinguished speakers dr. Cal mr. Buchan is the associate administrator of the science Mission Directorate at NASA headquarters in
Washington

doctors are booking previously served as professor of space science and aerospace engineering at the University of Michigan his research focused on Solar and Heliospheric physics he was also the university's founding director of the College of the Center for Entrepreneurship in the College of Engineering.

with several NASA science missions he earned his PhD in Master of Science degree both in physics from the
University of Bern in Switzerland he's received many honors including the National Science and Technology Council presidential Early Career Award for scientists and engineers in 2004 and a nasa group Achievement Award in 2006 dr. Nicola Foxx is the project scientist for the Solar Probe plus since 2015 she has served as chief scientist for heliophysics in the Space Research branch of John Hopkins University Applied Physics Laboratory she was the deputy project scientist for NASA's Van Alen probe mission which studied the
radiation belts that surround Earth

44
00:02:12,139 --> 00:02:18,199
before joining AP

45
00:02:14,389 --> 00:02:20,568
as a research scientist in 1998 she

46
00:02:18,199 --> 00:02:24,500
was a National Research Council fellow

47
00:02:20,568 --> 00:02:27,949
at NASA's Goddard Space Flight Center

48
00:02:24,500 --> 00:02:32,389
she earned a PhD in physics from the

49
00:02:27,949 --> 00:02:35,119
Imperial College London our next speaker

50
00:02:32,389 --> 00:02:37,609
Eric Isaac's is the executive vice

51
00:02:35,120 --> 00:02:40,250
president for research innovation and

52
00:02:37,610 --> 00:02:44,030
national laboratories at the University

53
00:02:40,250 --> 00:02:46,189
of Chicago in that role he provides

54
00:02:44,030 --> 00:02:49,909
direct oversight of Argonne National

55
00:02:46,189 --> 00:02:52,489
Laboratory Fermilab the Marine

56
00:02:49,909 --> 00:02:54,139
Biological Laboratory and the

57
00:02:52,489 --> 00:02:56,090
university's founding partner
relationship with the giant Magellan
telescope project his responsibilities
include furthering the university's
effort in computation data science and
innovation in high park including the
Polsky Center for Entrepreneurship and
innovation he is the Robert a Millikan
Distinguished Service professor of
physics he previously served as the
university's provost and his director of
Argonne National Laboratory dr. Isaacs
earned a PhD in physics from MIT and he
is a condensed matter physicist whose
work focuses on quantum materials please
join me in giving a warm welcome to dr. Eric Isaacs

Thank You Rocky for that welcome and good morning to everybody and I also want to extend my welcome to Thomas and our partners at NASA we're really really an extraordinary day today we're here to honor professor Eugene Parker who's the University of Chicago emeritus professor in astronomy and astrophysics Jean Parker was an assistant professor in the department of physics and the Enrico Fermi Institute in 1958 when he predicted the existence of the solar
wind it was a fundamental insight that
forever changed the way in which we
understood the Sun the heliosphere and
in general interplanetary space to give
you an idea of how transformative this
idea what it was when he first proposed
it until this discovery of the solar
wind this prediction of the solar wind
by Professor Parker scientists regarded
the space in between planets outside the
heliosphere is essentially a vacuum so
this was really a transformative idea at
the time and really by and large this
and other projects that the professor
Parker led really led to define let's

call it Helio physics and and and the

study of the Sun now when the idea first

came out there was a lot of opposition

to this idea what I call revolutionary

idea it was quite strong his first paper

which was submitted to the Astrophysical

Journal was rejected by its two referees

the paper interestingly enough was saved

by another colleague of ours a professor

subramanyam Chandra Sekhar Chandra who

spent nearly 60 years at the University

as a faculty member and who later

received as many of you know the 1983

Nobel Prize in Physics
so Chandra clearly understood that important insights into the nature of the universe into science in general were not always warmly welcomed at first in fact Chandra himself had been ridiculed when he a generation earlier had predicted that massive star is much more massive than our own Sun could collapse into something he then called black holes less than two years after the paper that was published the paper on the solar wind was published professor Parker's theory his prediction was actually confirmed
by satellite observations of the solar wind and the rest of course is history.

professor Parker later became the Chandra Sekhar Distinguished Service professor and in 1999 NASA named its flagship mission for x-ray astronomy in honor of Chandra Sekhar whose timely invention ensured that Parker's insight received the public platform that it deserved.

so these interconnected relationships between NASA and legendary astrophysicist at the University of Chicago are neither unique nor
coincidental this University has been at the forefront of astronomy for over 220 years ever since the very first light at the Yerkes Observatory on May 1987-1990 it's been a while so you know with its 40 inch refracting telescope Yorkies as many of you know retain the title of the world's largest telescope for more than a decade of course it's still the world's largest refracting telescope you can debate the usefulness of that but it also became the home of the university's department of astronomy and astrophysics early on and that's where Edwin Hubble
was working when he completed his PhD at

Yerkes in 1919 and his name lives on in

NASA's Hubble Space Telescope of course

the first major optical skills telescope

to be placed in space and of course

Hubble is but one of the lists of

Extraordinary the University of Chicago

in this short time under 20 years it is

impossible to go through the entire list

of what we've done but I'd like to

mention a few today the University of

Chicago remains at the cutting edge of

discovery in astronomy and astrophysics

we are the leading us collaborator on an
international project to play a cosmic ray telescope on the International Space Station later this decade the extreme universe space Observatory which is funded by a grant from NASA the University is also a core participant in the South Pole telescope which is a powerful tool already in operation looking at these structures of the Cosmic Microwave Background and searching for example for dark energy we're also the founding partner in the giant Magellan telescope in Chile which will be the world's largest optical
telescope when it begins early operate

in 2021 and which will produce images

that are at least ten times sharper than

what we can do today on earth or by the

Hubble Space Telescope in the sky we are

also an organizer of the Project Observatory in Argentina which is a

cosmic ray detector very large ones

roughly the size of the state of Rhode Island

so these exceptional tools and discoveries are matched by our outstanding faculty and other university researchers

our department of astronomy and
astrophysics is home to an exceptionally talented faculty who are opening the door to the cosmos for the next generation of astronomers and everyone else who is passionate about science and discovery. So spice to say we're very proud to join NASA and honoring professor Parker for his revolutionary vision of the Sun the heliosphere and for his seminal contribution to plasma astrophysics so we look forward to continuing our exploration of the universe in partnership with NASA.
with scientists across the country and

215 00:09:10,360 --> 00:09:26,110 around the world thank you thank you

216 00:09:21,278 --> 00:09:27,700 Eric today's event was almost 60 years

217 00:09:26,110 --> 00:09:33,278 in the making

218 00:09:27,700 --> 00:09:36,040 in October of 1958 University of Chicago

219 00:09:33,278 --> 00:09:38,169 professor John Simpson convened the

220 00:09:36,039 --> 00:09:41,338 physics of fields and particles in space

221 00:09:38,169 --> 00:09:45,549 committee of the space science board

222 00:09:41,339 --> 00:09:48,970 right here on campus in 1958 the space

223 00:09:45,549 --> 00:09:51,338 science board ultimately advised NASA

224 00:09:48,970 --> 00:10:00,338 the Department of Defense and the

225 00:09:51,339 --> 00:09:56,800 National Science Foundation on aspects

226 00:09:54,159 --> 00:10:00,338 of interplanetary probes and space

227 00:09:56,799 --> 00:10:03,549 stations potential problems of manned

228 00:10:00,339 --> 00:10:07,800 space flight the exploration of Venus
and Mars and other space related matters

they also added a list of long-range

plans for particularly interesting

research that list included a solar

probe to study particles and fields in

the vicinity of the Sun

since that first meeting of the Simpson

committee the Solar Probe has remained

at the top of various National Academy

and NASA science policy lists so it's

very appropriate that we are here in

Chicago today to honor Jean Parker whose

groundbreaking work reshaped our vision

of the solar system and set this entire
endeavor in motion in the six decades since Eugene Parker's discovery of the solar wind we have made tremendous gains in our knowledge of solar and space physics through NASA's missions to space we have investigated the composition properties and structure of the solar wind we have captured incredibly detailed images of the sun's corona we have advanced our knowledge in ways that the committee might not have dreamed of and yet so many fundamental questions about the solar wind remain unanswered six decades ago Eugene Parker asked a
fundamental question about the structure
of the Sun's corona that question led him to predict the existence of the solar wind and permanently transform the way we think of space today we celebrate the profound question that he asked and the brilliance and creativity with which he answered it but even more importantly we celebrate the questions that flowed from that first answer questions that have led us through six decades to this historic mission we look forward to finding answers to those questions through the data that the Solar Probe
will send to us but even more we look forward to new questions that will arise from those answers which will point us to yet more exciting discoveries thank you.

we would now like to share with you a video about Jean Parker and the impressive work that has brought us here today well the Sun is the primary puzzle in the universe because it's the one star we can observe in detail and stars are complicated things you can't imagine all the strange things that I have been discovered in the Sun as a child I enjoyed very much learning how things
work and when I was in high school I

took the physics course my last year and

realized how fascinated I was when I

first stumbled across the mathematics

and established the solar wind

it was 1957 I was 30 years old sitting

over the ankle it's so simple

four lines of algebra in my first two or

three papers on the solar wind the solar

wind does not appear I talked about

silver corpuscular radiation and then

it's sort of realized it's a flow of gas

and it's what if it meets the solar wind

when I wrote the first paper as far as I
was concerned it was open unshot i

remember how upset the referee what was

the Chandrasekar the editor sent my

first paper to and he said this is

ridiculous and before you write a

scientific paper you should at least

take the trouble of going to the library

and reading up on the subject

no further criticism no further comment

my response to Chandrasekar was well he

couldn't find anything wrong with it

let's be pretty good I've always looked

upon myself as a businessman learning

new tricks by looking at nature the
space the whole galaxy the whole universe I know no better place to find physics

I'm really excited to be here today for two reasons first of all this is one of my favorite cities my wife grew up here and I spent a lot of times here at you know Christmases holidays and blues clubs and many amazing restaurants around towns I'm just glad to be back but more importantly I'm so excited to be here because of Eugene and everything you have done for this amazing field of
science that I'm part of at NASA what

00:15:46,860 --> 00:15:55,050
I'd like to do is really point to the

00:15:52,200 --> 00:15:57,000
fact of course that the way we look at

00:15:55,049 --> 00:15:59,250
the signs today through the many

00:15:57,000 --> 00:16:01,580
telescopes that are out there as a

00:15:59,250 --> 00:16:05,669
result of the work that you have done

00:16:01,580 --> 00:16:08,100
gene nature has become more beautiful

00:16:05,669 --> 00:16:10,529
more complex just like you said but more

00:16:08,100 --> 00:16:13,759
beautiful I look at this amazing image

00:16:10,529 --> 00:16:17,730
here by one of the recent NASA missions

00:16:13,759 --> 00:16:20,250
you also pointed out of course that the

00:16:17,730 --> 00:16:23,700
way they started the stories with comets

00:16:20,250 --> 00:16:26,309
the first line of your paper in 1958

00:16:23,700 --> 00:16:28,080
pointed to observations of Comet tail's

00:16:26,309 --> 00:16:30,629
that basically said that these tails
343
00:16:28,080 --> 00:16:32,310
this is a really rapid one not lying

344
00:16:30,629 --> 00:16:34,399
near the Sun really quickly and

345
00:16:32,309 --> 00:16:37,829
interacting with a coronal mass ejection

346
00:16:34,399 --> 00:16:39,720
as measured by stereo but that these

347
00:16:37,830 --> 00:16:42,000
tails really indicate that there are

348
00:16:39,720 --> 00:16:43,700
fast winds and these fast winds of

349
00:16:42,000 --> 00:16:46,049
course people really couldn't imagine

350
00:16:43,700 --> 00:16:49,560
because what they thought about is that

351
00:16:46,049 --> 00:16:51,629
the Sun would just like slowly bake off

352
00:16:49,559 --> 00:16:54,089
and you know a really small kind of

353
00:16:51,629 --> 00:16:56,490
breeze would happen there oh no that

354
00:16:54,090 --> 00:16:58,379
space between the planets it's a lot

355
00:16:56,490 --> 00:17:03,360
more exciting with a lot more science

356
00:16:58,379 --> 00:17:07,250
going on than anybody predicted of
course just a few years later your prediction was confirmed with Mariner 2 that was outside of the bow shock of the earth and saw the supersonic solar winds just like you said are approximately the temperature that you had said you know then see a little bit less perhaps than you said in your initial paper if I ever write a paper that that's accurate I'll be really really glad but this is Mariner 2 in addition to that of course what that space crafted in a subsequent spacecraft they also observe the magnetic field
shape that was later in the same paper

that you predicted a magnetic field that we refer to as the pole at the parker

magnetic field you know and so it's that observation that that was also made so really creating making this a huge home run and really one of the biggest kind of discoveries I believe in a solar and space physics or Helio physics as you pointed out once you have two solar wind and you know it's speed and it's tensed you know if I guess about the magnetic field and the structure of the the galaxy which is another subject area
that you focused on the recognition that

386 00:18:22,440 --> 00:18:26,549 there's magnetic fields out there and

387 00:18:24,450 --> 00:18:28,620 that this universe is not subscribe

388 00:18:26,549 --> 00:18:31,049 occasional it's really magnetic and

389 00:18:28,619 --> 00:18:33,179 there's important impacts that happen

390 00:18:31,049 --> 00:18:36,389 once you know the solar wind you can

391 00:18:33,180 --> 00:18:38,519 guess how big that bubble is that kind

392 00:18:36,390 --> 00:18:41,759 of space that fills it's filled by the

393 00:18:38,519 --> 00:18:45,329 Sun we refer to it as the heliosphere

394 00:18:41,759 --> 00:18:47,279 and only about five years ago did we

395 00:18:45,329 --> 00:18:49,259 cross through that boundary into our

396 00:18:47,279 --> 00:18:51,539 galactic environment worked at our

397 00:18:49,259 --> 00:18:53,759 friend Tom chemichi sitting right here

398 00:18:51,539 --> 00:18:56,250 and his colleagues on Voyager

399 00:18:53,759 --> 00:18:58,890 have done amazing I work with and
basically we're right now on the outside

I was one of these missions we believe looking at for the first time that galactic environment again a magnetic galactic environment of the types that you have predicted and whereas the other one the other Voyager is kind of still are sneaking up on that boundary from the inside going back to our near-earth environment of course what we have right now is these missions out there we call a magnetosphere multiscale missions about their observing is an important process that you talked about really
early on

I was sweet you talked about the merging

of magnetic fields and the important

interactions that would happen if these

magnetic fields in fact coalesced and we

reconnected we talked about that process

as reconnection only just a couple years

ago or even this year there are new

science papers out there that talk about

the first really in situ multi point

observations of these processes

processes that are important not just

near earth where we observe and right in

front of our door but they’re universal
because we observe these processes around as the physical objects around other planets in many different places in the universe and so that's another one of the seminal papers but going back to the Sun you know like who would have guessed how amazing the Sun looks look through the kind of eyes of somebody who understands that there's magnetic fields they're you know they're karana the atmosphere of the Sun of course is heated to a temperature much higher than the surface of the Sun because of processes we're still trying to learn
about that you wrote a paper that

basically talked about microscopic kind

of nano flare type of healing events

that will be at the heart of that

heating the amazing structures that we

see there and there's a lot of evidence

and papers that we see in the literature

even today that basically point to the

fact that this is much more likely than

we ever would predict but we want to go

check and that's really where kind of

the culmination I believe of the

research that we've been doing in this

field and Solar and Heliospheric physics

and I'm Helio physics in general is and
that is about the Solar Probe mission we want to go down there take the challenge of going in the worst kind of thermal environment in the solar system survive that because we built the machines who are bused enough to do that measure the environment there and really prove and find what the kind of heating processes really are that in fact make the corona hot and and accelerate the solar wind now NASA has named about 20 spacecraft after distinguished researchers like Kabul Chandrasekhar and Fermi all of them with
a Chicago ties many others about 20 not many as a lot more Nobel Prize winners than people that have been a spacecraft named after them but but so about 20 however nASA has never named a spacecraft after researcher during their lifetime well ladies and gentlemen we're about to make history it is my great honor a few days before your 90th birthday Jean to announce that we're renaming the Solar Probe plus spacecraft to be known from now on as the Parker Solar Probe congratulations [Applause]
00:22:57,640 --> 00:23:02,910
thanks so much

486
00:22:59,220 --> 00:23:02,910
clearly free setup

487
00:23:05,269 --> 00:23:07,329
I

488
00:23:21,650 --> 00:23:40,200
so I think I wrote my speech down here

489
00:23:33,180 --> 00:23:42,210
and I don't intend to reiterate what

490
00:23:42,210 --> 00:23:48,029
you've already heard plenty of but I'm

491
00:23:44,250 --> 00:23:48,029
certainly greatly honored to be

492
00:23:48,029 --> 00:23:51,359
associated for such a heroic scientific

493
00:23:51,359 --> 00:23:57,389
space mission by heroic of course I'm

494
00:23:57,390 --> 00:24:11,400
referring to the temperature the thermal

495
00:23:59,250 --> 00:24:04,740
radiation from the Sun and the extreme

496
00:24:01,440 --> 00:24:07,890
measures developed to survive that

497
00:24:04,740 --> 00:24:11,400
radiation and collect scientific data

498
00:24:07,890 --> 00:24:11,400
should be fully appreciated you've heard
the design of the spacecraft in earlier

00:24:07,890 --> 00:24:13,920
lectures here I'm sure but it was not

00:24:11,400 --> 00:24:17,880
easy and I thought I would run through

00:24:13,920 --> 00:24:19,740
the two main effects for instance the

00:24:17,880 --> 00:24:23,430
initial development of Solar Probe

00:24:19,740 --> 00:24:25,700
concept at JPL showed the extreme

00:24:23,430 --> 00:24:28,380
technical possibility of a spacecraft

00:24:25,700 --> 00:24:34,140
surviving an orbital plunge into four

00:24:28,380 --> 00:24:36,810
solar radii this essentially JPL went

00:24:34,140 --> 00:24:40,590
for broke they designed a fabulous

00:24:36,809 --> 00:24:44,099
spacecraft and at sunlight and this is

00:24:40,589 --> 00:24:46,619
what grabs me the sunlight is three

00:24:44,099 --> 00:24:49,740
thousand times more intense at four

00:24:46,619 --> 00:24:54,439
solar radii as it is out here of Earth

00:24:49,740 --> 00:24:56,819
it really is something amazing
unfortunately only very restricted

instrument instrumentation kind of

survived because the spacecraft serves as a heat shield and you do not dare poke anything out from behind that heat

shield to make a measurement so there are some exceptions to that which are very limited

the next goal at the problem was Solar

Probe plus as you all know design JP the Applied Physics Laboratory

designed for a slow approach inward to nine solar radii where the Sun is only five hundred and seventy times more
intense than it is here at the orbit of
Earth and it is possible to operate a
complement of instruments peeking out
from behind the heat soon for an
extended period of time one of the
drawbacks of the original Solar Probe
was that it's all over in a few hours at
the for solar idiotic as a theoretician
I greatly admire the scientists and
gineers whose patient efforts together
converted the soar probe concept into a
functioning reality ready to do battle
with the solar elements as it divulges
the secrets of the expanding corona
so hooray for solar pro thank you

well just well I am Mickey Fox and I am so honored to stand here today representing the solar proof team and this isn't just the team that buildings this particular mission but I really feel it's the thousands and thousands of researchers who've poured their heart and soul into making this reality this mission a reality over the last 60 years Solar Probe is going to be the hottest fastest mission I like to call it the coolest Carter's mission Under the Sun
we are going to be moving at blistering

temperatures we are going to go right up

into the corona

as you've heard of the revolutionary work of dr. Parker from as far back of

1958 still we have not been able to

answer these key questions there's been

so many NASA missions who've made

tremendous advances we've done so much

with remote sensing we've been inside

the orbit of mercury and we've done

amazing things but until you actually go

there and touch the Sun you really can't

answer these questions and these

questions are so simple why is the
corona hotter than the surface of the Sun that defies the laws of nature like water flowing uphill it shouldn't happen why in this region does the solar atmosphere suddenly get so energized that it escapes from the pole of the Sun and based all of the planets we have not been able to answer these questions without actually taking a probe into the Sun and we're going to be moving at blistering speeds we will be moving at about four hundred and thirty thousand miles an hour that's about 118 miles per second
wouldn't you we'll enjoy your morning

commute at that speed we're going to be

seven times closer than any other

mission has ever been and we will

repeatedly swoop through the corona

making these measurements so why has it

taken us 60 years to be able to do it

because honestly the materials didn't

exist to allow us to be able to do it

the very first thing we had to do is

make a heat shield and

we love our heat shield our heat shield

was developed using NASA research money

led by APL together with the whiting
school at Johns Hopkins and many other contributors who actually designed a carbon-carbon composite to be able to withstand the temperature but also we're doing 24 orbits so we actually go hot then cold then hot then cold and getting something that will withstand that kind of thing is really revolutionary we also have to design new solar panels keep them cool their kind of honor like a shoulder joint so they move in and out as we go close I'm further away from the Sun and we're so close to the Sun that just the little
finger tips poke out from those solar
panels and that generates enough solar
energy for us to be able to operate the
mission right now the spacecraft is
being built and tested being put through
a lot of rigorous testing to make sure
we can withstand that environment we're
going into the corona as you heard the
corona temperatures can get up to a
couple of million degrees we're not
going quite that close but still well
we're going to will be at 2500 degrees
Fahrenheit and yet our instruments that
are tucked in the shadow behind our heat
shield will be operating about
temperature of this room about room

temperature so we're building it we're

testing it we have a couple of the

instruments already integrated by the

end of the summer most of them will be

on and it is my pleasure to be able to

introduce you to representatives of our

science team our principal investigators

from the payload so in the order that

you're sitting I will introduce Justin

Casper from the University of Michigan

he's also a Chicago alum by the way

Stewart bail from the University of
Chicago at Communiversity California

sorry

University of California at Berkeley has

got Chicago on the mind got to date

McCullough's from Princeton University

[Applause]

it's got the mark in the valley from

University of California Los Angeles and

last but certainly not least dr. ruff

Howard from the Naval Research now so

together using a variety of Institute

and remote sensing we will finally

answer these questions I also want to

reduce introduce one more person I like
to call on the man behind the curtain

he is our project manager that keeps us all going on schedule on budget and never lets us take a vacation

Andy drives Minh so what’s next for us

so I said we are building testing integrating the instruments are biting our fingernails in the end of the fifth year we will actually move to godus where we will do some final testing including the kind of nerve-wracking thermal environment where we make sure that everything is going to work in that environment from there we go down to
Florida and we launch on a delta 4 heavy

00:31:45,190 --> 00:31:49,130
weather and we also have a third stage

00:31:47,660 --> 00:31:52,009
and that's because we need to be moving

00:31:49,130 --> 00:31:54,020
so fast so that we can kind of surf

00:31:52,009 --> 00:31:55,759
around the Sun make all those

00:31:54,019 --> 00:31:59,839
measurements and not get pulled into the

00:31:55,759 --> 00:32:02,240
Sun we go to work straight away just

00:31:59,839 --> 00:32:04,879
eight weeks after launch we encounter

00:32:02,240 --> 00:32:06,559
Venus for the first time we do a venus

00:32:04,880 --> 00:32:08,450
fly by now many of you are used to

00:32:06,559 --> 00:32:10,669
hearing about gravity assists where we

00:32:08,450 --> 00:32:13,190
actually accelerate the probe we are

00:32:10,670 --> 00:32:15,289
very generous we are giving energy to

00:32:13,190 --> 00:32:18,440
Venus we're actually using the Venus Fly

00:32:15,289 --> 00:32:20,720
Buys to just trim and really precision
of where we need to be to make to actually hit our solar orbital targets each time just eight weeks after that we will encounter the Sun for the first time we will do our first closest approach following that we will do another thick Venus Fly Buys over the course of just of seven years so we kind of gradually get closer and closer and surf more and more gracefully in towards the Sun until we're just under four million miles or ten solar radii now four million mammoth miles may not sound that close to you
but if the earth and the Sun were separated by one meter we would be at four centimeters from the Sun so it's actually very very close in fact so close that we'll be in a region that you yourself may be able to see this summer during a total solar eclipse you are able to see the hazy corona around the Sun August 21st this year the first time in a hundred years there'll be a total solar eclipse that is visible from the USA so I do encourage you to go and see it when you look up and you see the

Eclipse Solar Probe is going to be right
in there

not only are we doing basic science but

we are also going to be providing

critical information that will allow us

to better forecast how our earth responds to the Sun will be

doing critical advances that will enable

us to better predict space weather so

for that reason we're going to send

Solar Probe into the corona and we will

finally touch the Sun NASA's pokhara

Solar Probe mission is about to embark

on a historic journey to our very own

star the Sun

Solar Probe mission is about to embark on a historic journey to our very own star the Sun.
named for Dr. Eugene and Parker whose contributions have revolutionized our understanding of the Sun. Parker Solar Probe will usher in a new era of exploration. It's a mission of extremes. The spacecraft will plunge through the Sun's atmosphere called the corona and fly closer to the Sun's surface than any spacecraft in history more than seven times closer. The Sun's surface is hot at temperatures exceeding 10,000 degrees Fahrenheit but the real surprise is its atmosphere is even hotter 300 times on facing the Corona's brutal heat and radiation conditions.
Parker Solar Probe will finally provide answers to some of the most important questions about how our Sun works as Parker Solar Probe speeds around the Sun making these measurements it's moving at over 430,000 miles per hour that's like traveling from north to Tokyo in less than a minute this mission is the culmination of 60 years work by the best and brightest scientific and engineering minds today our technology will let us achieve our dreams to reveal the secrets of a corona and our Sun and to one day help better
protect technology from the threats of space weapon 2018 we will launch Parker's Solar Probe humanity's first mission to touch the Sun okay I'm sure there's not a dry eye in the house of anyone who's actually associated with that mission okay so it just remains for me to say that to dr. Parker that we are going to be flying a chip on the spacecraft we're going to put some photographs of you and your
seminal paper from 1958 we're also going
to have it on a mounting plate and we
would like to invite you to write
whatever inscription you would like us
to put on that plate and Center the Sun
and then the final thing I have to do is
to my great honor on behalf of the whole
solar pro team to present you with a
very first scale model of Parker Solar
Probe

[Applause]

well as I said I'm greatly honored to
have been associated with this heroic
scientific mission and I was just
examining it there I I guess I need some

instruction as to what all the things

are so thank you very much

[Applause]

now we'll take a few questions from the

audience and from social media please

raise your hands

and our staff will come to you with a

microphone once you have the microphone

please identify yourself and your

affiliation and then ask your question

yes a question from this gentleman in

the front yes you need a microphone and

identify yourself no one here knows you

my name is Eric Isaac's can you please
say a little bit more about the kinds of
instruments you actually have and maybe
this addresses genes question about
what's on the model but what are the
instruments you have and
what are the instruments you have and
and what are your wildest dreams about
what you hope to find nikola with some
instruments so as you've already met the
pis but we have the sort of bulk plasma
the the bread and butter of the solar
wind if you will we have a couple of
instruments that are going to be
measuring what's coming out radially
from the Sun and we have instruments
positioned in different locations so whatever angle that comes out as we've got it we have a full suite of magnetic so here's the magnetic instruments on the back here the electric fields on the front so we can measure plasma waves we have a high energetic particle sweet to get the really you know the stuff that comes with the flares and the shocks and last but not least we have a white light imager called whisper that is going to be taking pictures of the structures that we're about to fly through so it will help us put into context what we're
seeing wildest dreams I wanted to go and

explain Parker's paper that that's what

I want to do Thank You Nikola let's see

we have another question right there hi

Charlie boy Janeski from NBC 5 in

Chicago why is it important to send this

into the Sun why is it important to

touch the base of the Sun rather than

just brush closely by it and preserve

the satellite so I mean we will brush

closely by it we're obviously not going

to go right off and touch it but if you

imagine them you can learn so much from

looking out the window you can see the
sun is shining you can see the birds

00:40:00,440 --> 00:40:03,950
singing but until you actually go out

00:40:02,329 --> 00:40:05,869
you have no idea of how hot it is

00:40:03,949 --> 00:40:07,819
there or how windy it is or what the

00:40:05,869 --> 00:40:09,710
conditions are like so I think we've

00:40:07,820 --> 00:40:11,900
really come as far as we can with

00:40:09,710 --> 00:40:15,559
looking at things that it's now time to

00:40:11,900 --> 00:40:27,710
go from pair to visit now we'll take a

00:40:15,559 --> 00:40:32,509
question from social media we have a

00:40:27,710 --> 00:40:34,190
tweet we do have a tweet we have a

00:40:32,510 --> 00:40:37,010
question from Joel who would like to

00:40:34,190 --> 00:40:38,690
know why we are only going to four

00:40:37,010 --> 00:40:40,070
million miles is there a limit on the

00:40:38,690 --> 00:40:44,690
heat on the orbit what are the

00:40:40,070 --> 00:40:46,670
parameters the heat shield and various
things are designed to work at the four million miles the reason we can't go any closer is after our seventh Venus flyby our furthest point away from the Sun is actually now inside the Venus orbit so we can no longer use it to trim the orbit and move closer so we're going to go to nine nine point eight solar radio three good I'll take that okay thank you all now before we close I believe that nASA has they haven't done very much so they have a final special recognition to present to you Jean please welcome back Thomas or bookin
Kleenex up here look at your good before

I do it I just want to quickly tell you
tattoo of my Parker stories so I know

how I got to know him first conference

ever went to I was in Switzerland and

like people there well men there I was

in the military and I was I got you know

a time off from the military to come to

the first conference and so I walked in

was on the train the whole night to

Germany which were that conference was

and I walked in the door and I sat down

and so I didn't know who was there of

course I had read all your papers right
and so I sat there in the conference and

some guy gave the talk and you jumped

your feet and asked the question

everything was quiet like momentarily

like because you got up there and like

yes a really good question were really

nice he struggled he really lost its

footing me I know you preeminent person

and in that field you don't want to get

hard questions from Jean if you can help

it but anyway so he did a good job you

were really nice to a master who is this

guy why is everybody stopping that's

Jean Parker so for me that's how I met


you of course wouldn't know you saw

my back from where you were sitting

I'll give you another story and that is

when you learn when I might be due to a

seminar to the University of Michigan I

thought it was really important that

students saw the kind of leaders that

you are and I basically asked you you

would hang out with the students very

generous with your time just like you

were in that first conference when we

later and that but but the time you

spent there I basically asked you how do

I introduce you Jean you know like I

could you know talk about the kind of
things we talk about here how do I

introduce you and he basically said well

how about you introduce me like this I

did my grad school couldn't find a job

went to Utah because that's the only

people actually offered me one and I do

to a friend got back to Chicago wrote

papers I couldn't get published due to

another friend

I finally got unpublished and

and the rest was pretty good see what I

liked about this I said why would you

want me to introduce you that way any

basically said well these students need
to know that even if you're successful it's going to be hard from time to time and many of the most important science discoveries that we have are a little bit controversial at the beginning or very very very controversial like you have so so those are good of two of my anecdotes I want to talk about and for the next thing I'm going to ask you Steve Clark here at the division director of heliophysics to come up what I want to do first is talk to you about the distinguished Public Service Medal of NASA and it's the highest form of
recognition awarded by NASA to an

individual who is not a government employee it's awarded based on the merit of that person on the excellence in a
towards NASA and the nation and it's a that medal that we'd like to give to you now here so what I'm going to do is read

the dedication which is sign of course by the administrator this is only the administrator can give that medal and it is for a lifetime of extraordinary scientific achievement and outstanding leadership in space science and NASA's Space Program gene it's an honor to give
you that medal congratulations

956
00:45:23,190 --> 00:45:54,829
[Applause]

957
00:45:58,599 --> 00:46:03,619
what a wonderful morning

958
00:46:00,909 --> 00:46:05,869
tank you everyone watching across the

959
00:46:03,619 --> 00:46:07,579
country and to all of you who have

960
00:46:05,869 --> 00:46:11,289
joined us here at the University of

961
00:46:07,579 --> 00:46:13,849
Chicago there will be a short media

962
00:46:11,289 --> 00:46:16,389
question-and-answer so media you are not

963
00:46:13,849 --> 00:46:19,369
allowed to leave the room please remain

964
00:46:16,389 --> 00:46:22,250
everyone else please join us in the

965
00:46:19,369 --> 00:46:25,359
atrium for reception and demonstrations

966
00:46:22,250 --> 00:46:31,958
thank you very much and thank you Jean

967
00:46:25,360 --> 00:46:31,959
[Applause]