

# Benefits Of ISS for Humanity

# ISS made Habitable, what next ?

- research began on the study of Microgravity
- the impact of MG on several aspects of our daily life
- how it eases us in understanding space better
- this serves as a cool platform to study the effects of new experiments to be conducted at MG scenario
- no lab on earth surface could help us study SPACE better than this one on LEO

- do we have in mind about the preset idea of what we going to get as a result upon working an experiment on ISS ?
- um i dont think so , because , its a complete learning process in the space lab , with all the learning through out
- on the way , are the amazing breakthrough discoveries ! (To err is Man, and the mistake is an accidental beneficiary by product)
- performed activities / experiments have given us the value of FULLY utilised ISS (once the assembling process is complete)
- Goal for everyone who's working for ISS ?
- Betterment of Humanity

# Beneficiary Areas :

- Human Life Science
- Biological Science
- Human Physiology
- Physical and Material Science

# Advance Studies :

Vaccine Development Research, Image Processed by the Station , assisting us for Disaster relief , Agriculture

ISS , was, is and will always have an impact on Life On Earth

these benefits will drive the legacy of the space station as its research strengthens economies and enhances the quality of life here on Earth for all people.

# Work on Health

- Aging
- Trauma
- Disease
- Cell / Tissue Growth
- Bone loss
- support of Astronaut Health on MG zone
- the psychological stress are also of major interest to the scientists

# Cell / Tissue Growth



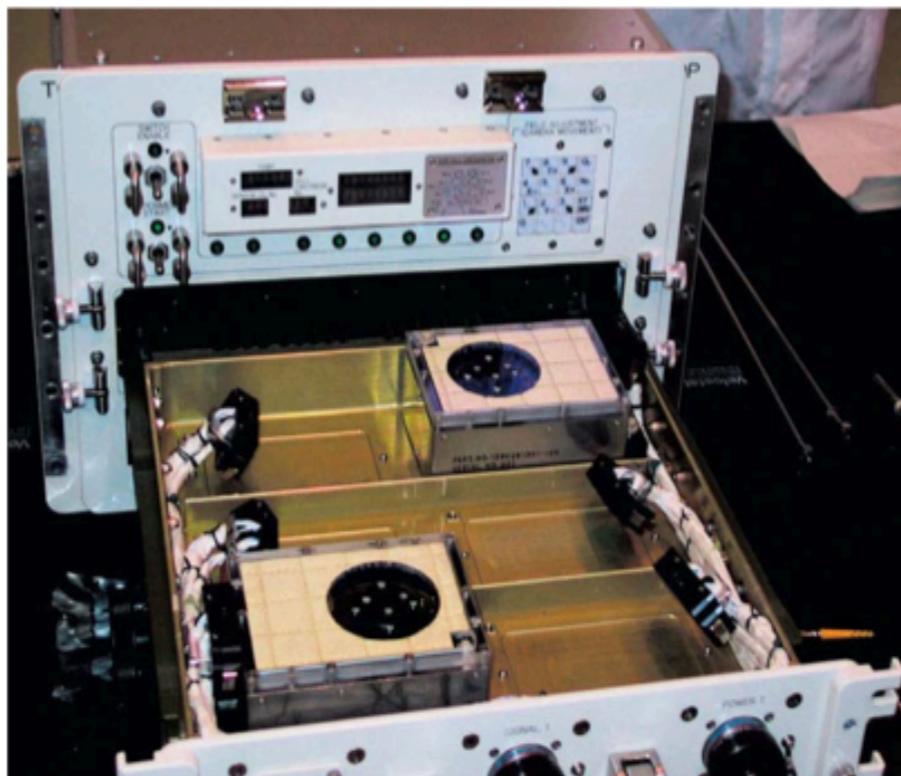
**An example of Salmonella invading cultured human cells. (Image courtesy of Rocky Mountain Laboratories, NIAID, NIH)**

# Bone loss & support of Astronaut Health on MG zone

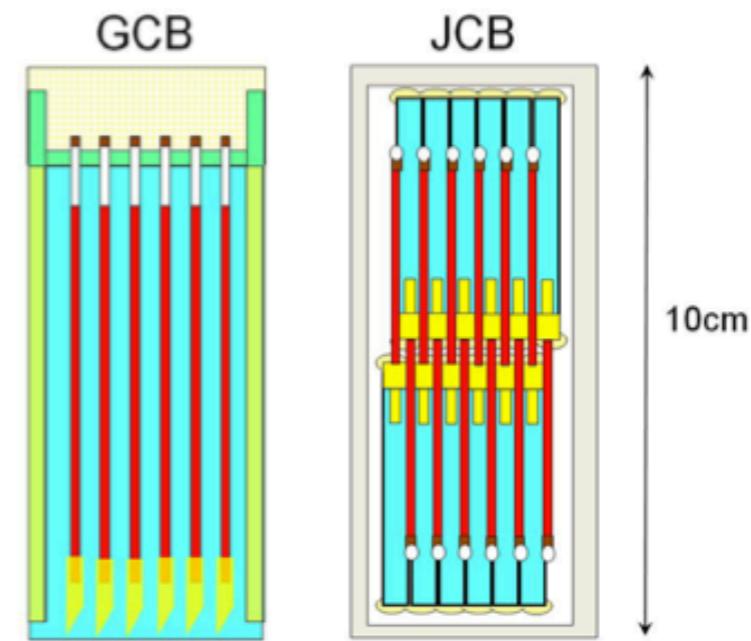


**ESA astronaut Frank De Winne undertaking a body mass measurement, an essential element of the SOLO experiment, on the space station.**  
**(Image: ESA)**

**Figure 2. Protein Crystallization Research Facility**  
**Protein Crystallization Research Facility, or PCRF,**  
**is a sub-rack payload used for the protein**  
**crystallization experiments, which provides**  
**controlled temperature and can hold six cell**  
**units (up to 144 proteins) inside.**



**Figure 3. Gel Tube Cartridge (JCB)**  
**Gel-Tube cartridge called "JCB" which contains**  
**twelve crystallization capillaries inside is a simple**  
**and economical crystallization tool. It requires only**  
**minimum onboard operation of astronauts.**  
(© JAXA)



# Cancer Treatment



**Dr. Morrison with MEPS flight hardware ready to pack for the International Space Station UF-2 mission**

# the psychological stress



**ESA astronaut André Kuipers (left) and Russian cosmonaut Oleg Kononenko (right) with food items on the ISS in December 2011. In the SOLO experiment, astronaut subjects undergo two different diet regimes to determine the physiological effects of sodium on the body. (Image: ESA)**

# ISS serves a very good observation

- basically resolving ENVIRONMENTAL PROBLEMS of our home planet.
- it being a wonderful Observatory Locus that provides a good vantage over our ecosystems and automated equipments
- the observatory payloads-equipments are attached to the station's exterior
- collects data on Global climate, environmental change, natural hazards autonomously as well as crew operated
- the existing International partnerships , helps data sharing very much beneficial to people around the world
- this eases and promotes International collaboration on Earth-Observatory Activities

# Predicting the natural catastrophes beforehand and enhancing disaster management



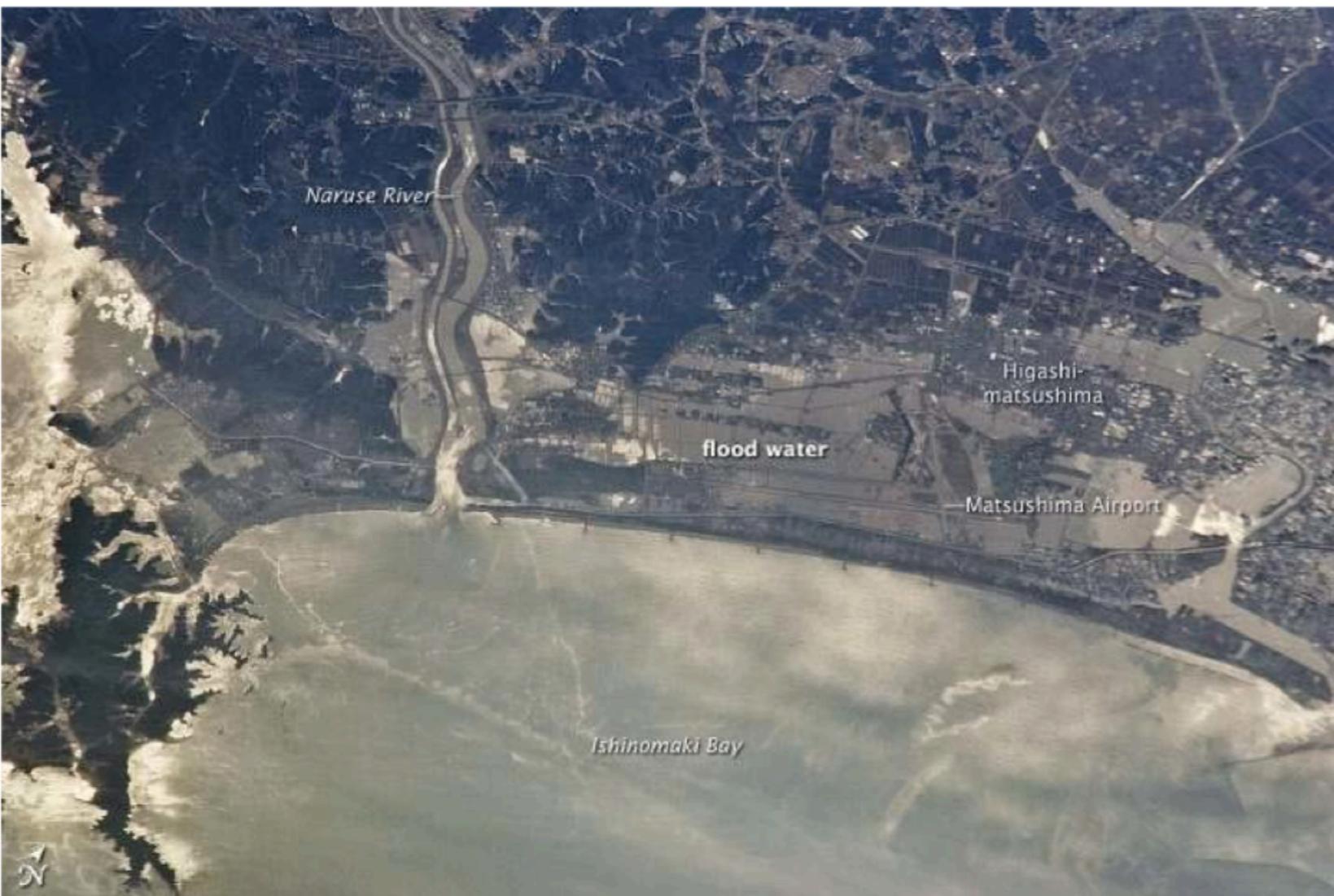
ISSAC “first light” image of Charlotte Harbor, Fla. acquired June 10, 2011, overlaid on Landsat 5 base image. The [ISSAC](#) scene is processed to highlight vegetation in red, urban areas in gray, and water surfaces in black. Clouds appear bright white.

# Traffic Control : Water, Land, Air, LEO



Screen capture of the Atlas of the Lagoon, showing geo-referenced astronaut photograph ISS023-E-13766 with a portion of the canal system (bright blue) added as an additional layer. The base image is an orthophoto mosaic (image created from a series of geometrically corrected images). Note that the site is currently only available in Italian.  
(<http://www.silvenezia.it/webgis/map.phtml?config=baseorto>)

# Disaster Analysis and Relief



Oblique image of the Japanese coastline north and east of Sendai following inundation by a tsunami. The photo was taken Mar. 13, 2011. Sunglint indicates the widespread presence of floodwaters and indicates oils and other materials on the water surface.

([http://eol.jsc.nasa.gov/EarthObservatory/Tsunami\\_Japan\\_2011\\_glint.htm](http://eol.jsc.nasa.gov/EarthObservatory/Tsunami_Japan_2011_glint.htm))

# Ecosystem Observation



Iles Glorieuses (îles Eparses archipelago, Indian Ocean). These islands are protected because of their importance for sea turtles and seabird nesting. (ISS002-E-6913)

# Global Education

ISS has widen our imaginations

students and teachers find it much helpful

programs like :

Space Calls ,

ARISS ( Radio on ISS ) ,

EarthKAM ,

STEM

UCHU RENCHI project , chain poem initiated by an astronaut, completed by people on Earth.

thus ISS is such a good source / study material made available , accessible by the younger generation : The tomorrow Scientists, Engineers, Writers , Artists, Politicians and the Explorers

# Number Facts:

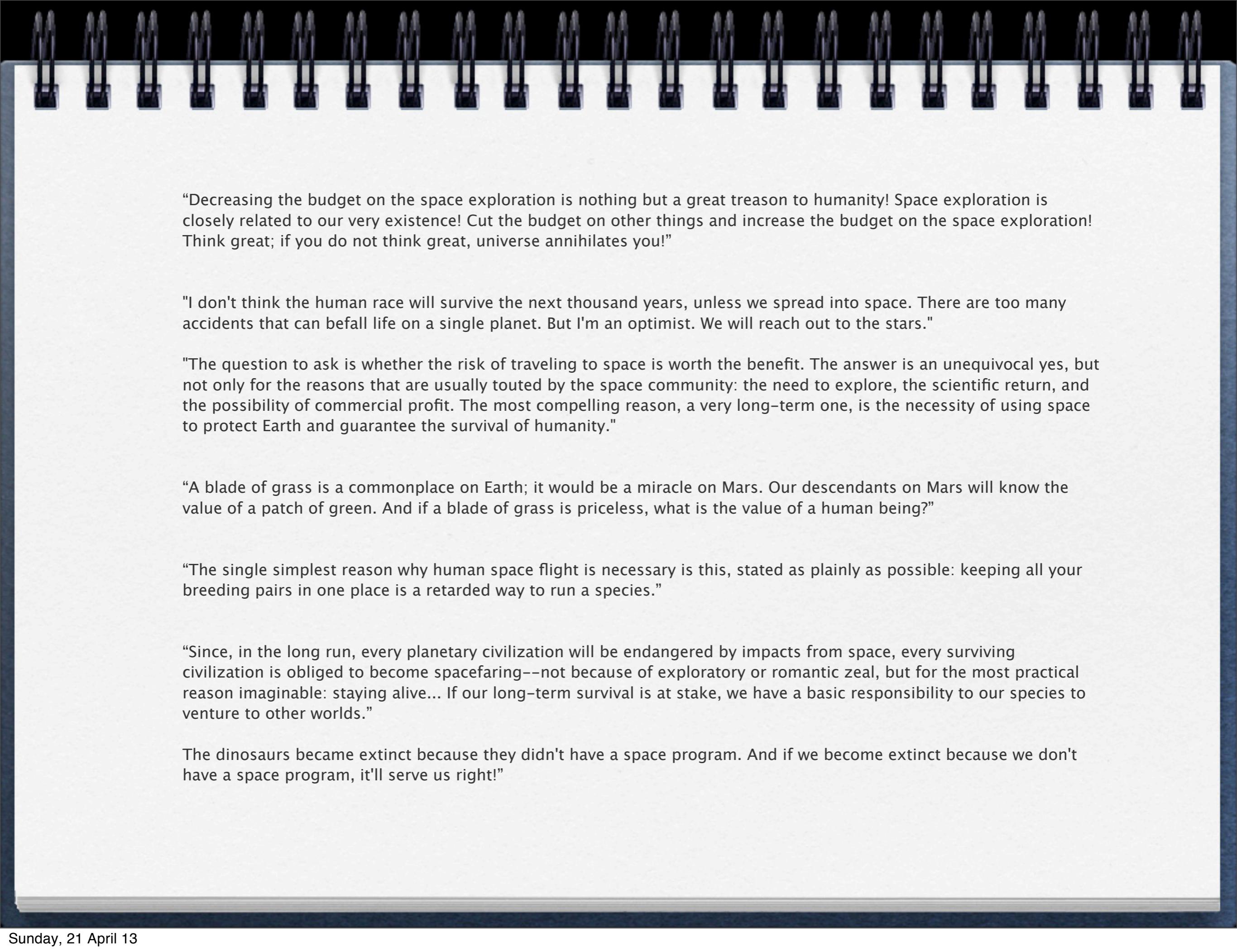
- 400 experiments
- 9 years
- Still one of its kind

## ISS to meet Today's Challenges:

- we could have more on board ISS, that could actually help us->
- to check on the carbon emissions on land (factories , vehicles )
- to check for oil spills
- to check for biodiversity thickness
- wastage of resources

# Why We Explore

- What we don't know about Space, inspires us to learn more about space



"Decreasing the budget on the space exploration is nothing but a great treason to humanity! Space exploration is closely related to our very existence! Cut the budget on other things and increase the budget on the space exploration! Think great; if you do not think great, universe annihilates you!"

"I don't think the human race will survive the next thousand years, unless we spread into space. There are too many accidents that can befall life on a single planet. But I'm an optimist. We will reach out to the stars."

"The question to ask is whether the risk of traveling to space is worth the benefit. The answer is an unequivocal yes, but not only for the reasons that are usually touted by the space community: the need to explore, the scientific return, and the possibility of commercial profit. The most compelling reason, a very long-term one, is the necessity of using space to protect Earth and guarantee the survival of humanity."

"A blade of grass is a commonplace on Earth; it would be a miracle on Mars. Our descendants on Mars will know the value of a patch of green. And if a blade of grass is priceless, what is the value of a human being?"

"The single simplest reason why human space flight is necessary is this, stated as plainly as possible: keeping all your breeding pairs in one place is a retarded way to run a species."

"Since, in the long run, every planetary civilization will be endangered by impacts from space, every surviving civilization is obliged to become spacefaring--not because of exploratory or romantic zeal, but for the most practical reason imaginable: staying alive... If our long-term survival is at stake, we have a basic responsibility to our species to venture to other worlds."

The dinosaurs became extinct because they didn't have a space program. And if we become extinct because we don't have a space program, it'll serve us right!"