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The International Space Station: A World Class Research Facility in Space

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THE INTERNATIONAL SPACE STATION

A World Class Research Facility in Space

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Slide Compilation – Joe Neigut/Program Science Office
Smoke from Alberta Fires

On May 8, 2016, CATS identified a smoke aerosol layer under a cirrus deck over Ohio. Using MODIS Terra imagery, the smoke plume was traced back to recent Alberta fires and was advected along with a trough over the Midwest United States, highlighting the long residence time that aerosols exhibit in the atmosphere.
**SPACE SCIENCE / FUNDAMENTAL PHYSICS**

**ALPHA MAGNETIC SPECTROMETER**
**UNPRECEDENTED OBSERVATIONS OF ELECTRONS AND POSITRONS IN GALACTIC COSMIC RAYS**

**MONITOR OF ALL-SKY X-RAY IMAGE (MAXI)**
**ENERGY OF RELATIVISTIC JETS FROM BLACK HOLES**
Exploring this realm will help scientists to answer some of the most fundamental questions in science:

- How does complexity arise in the universe?
- What is the nature of dark energy?
- Did Einstein have the last word on gravity?
- How did the universe begin?
- How do high temperature superconductors work?

The coldest spot in the known universe…
**COMBUSTION PHYSICS**

Multi-user Drop Combustion Apparatus (MDCA) / Combustion Integrated Rack (CIR)

**MATERIALS SCIENCE**

MSL Materials Science Lab

EML Electromagnetic Levitator

Directional Solidification

Dendritic Formation

Tip splitting

Hexagon

Square

Smectic Islands
**BIOLOGICAL SCIENCE**

- **Biological Research in Canisters (BRIC)**
- **SABL (Space Automated Bioproduct Lab)**
- **WetLab-2**
- **miniPCR on ISS**
- **Next generation ultrasound**
What’s Next?

- ISS in orbit since 1998, crewed since November 2000
- Will operate through at least 2024
- Research facilities are world class
- Will use as a testbed for human exploration beyond low Earth orbit