

ESAにおけるISS地球観測アイデア募集結果について

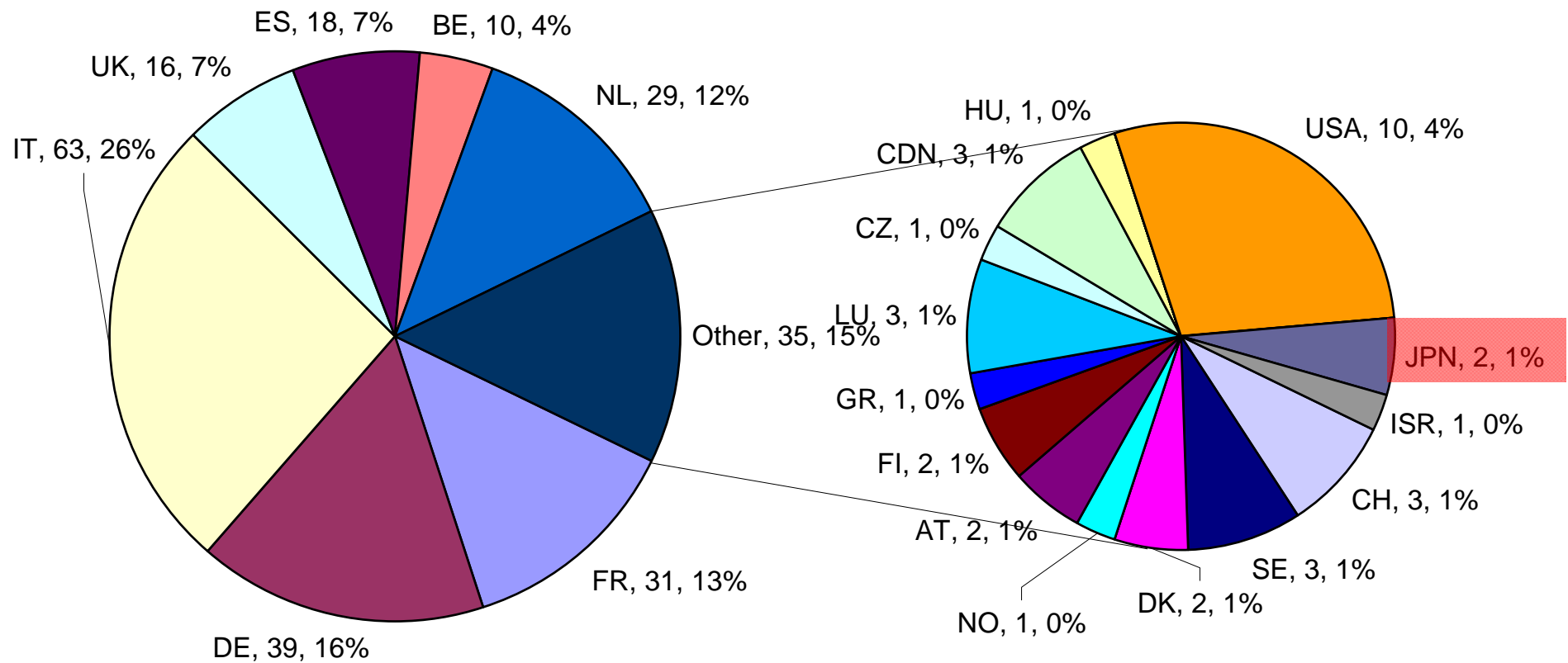
2010年9月28日

宇宙航空研究開発機構

Global Climate Change Studies from the ISS: ESA Call for Ideasの結果

- 募集は、2009年10月31日から2010年1月18日まで実施。
- 45 提案を受領。
- 共通テーマは、特別チームを編成して検討中。
- 2010年第4四半期を目処にAOの発出予定。
- ミッション選定は、2011年の第3四半期を予定。

Team Member Nationality Statistics



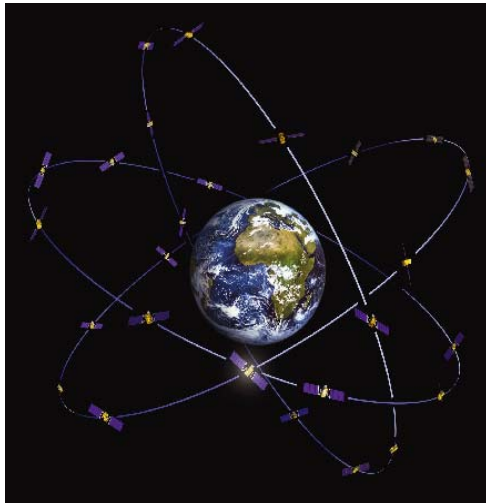
Prelim. Summary of 45 proposed Ideas received (1/2)

Proposal code	Title	Research Areas / Themes							
		Atmosphere	Ocean	Land Surface	Cryosphere	Solid Earth	Other Earth Sci & Education	Support/ Technology	Out of Scope
CFI-ISS-CC-01	The changing hydrography and man made biomass burning in Africa.			X					
CFI-ISS-CC-02	COLFIRES: A MULTISPECTRAL THERMAL CAMERA FOR DETECTION AND MONITORING OF WILDFIRES, VULCANOES AND COAL FIRES ON A GLOBAL SCALE	X		X					
CFI-ISS-CC-03	Advanced Monitoring of the Solar Induced Fluorescence	X	X	X					
CFI-ISS-CC-04	EFFECT OF CLIMATE CHANGE IN MICROBIAL BIODIVERSITY OF CRYOSPHERE				X				
CFI-ISS-CC-05	Real-time video Earth Observation payload for the ISS						X	X	
CFI-ISS-CC-06	Enhanced Leap-frog Imaging Stationary interferometer in the InfraRed spectral range			X					
CFI-ISS-CC-07	NatureFoil								X
CFI-ISS-CC-08	Monitoring of pollution by dioxins and PCBs in Brescia (Italy)			X					
CFI-ISS-CC-09	Air pollution in the Po Valley (Italy)	X							
CFI-ISS-CC-10	Mesosphere And Lower Thermosphere Lidar Investigation for ISS (MALTII)	X							
CFI-ISS-CC-11	SPEX: Multi-Angle Spectro-Polarimetry for Aerosol and Cloud Detection	X							
CFI-ISS-CC-12	VEGETATION, SNOW MONITORING, AND FIRE DETECTION FROM THE ISS	X	X	X	X			X	
CFI-ISS-CC-13	Compact, low cost and low power synthetic aperture radar for high resolution Earth		X	X				X	
CFI-ISS-CC-14	RainSAR	X							
CFI-ISS-CC-15	Imaging Artificial Nighttime Lighting from Space			X					
CFI-ISS-CC-16	EARTH – Super Spectral Payload for ISS			X					
CFI-ISS-CC-17	RAIN - MMW 94 GHz Cloud Doppler Radar	X							
CFI-ISS-CC-18	Compact atmospheric limb sounder for the retrieval of ozone, nitrogen dioxide and stratospheric aerosol vertical profiles.	X							
CFI-ISS-CC-19	A set of spectro-radiometric instruments requiring solar pointing capability for upper atmosphere remote sounding of temperature and CO/CO2 vertical profiles, evaluation of the IR solar irradiance and earth radiation budget, with CO2, upper-air temperature and earth radiation budget as target ECV's (essential climate variables).	X							
CFI-ISS-CC--020	ISS – Vegetation Improving ECV time series, Upscaling of Flux Tower Measurement and enhancing GPP estimates			X					
CFI-ISS-CC--021	I.S.A.A.C. (Integrated Spectrometer for the Analysis of Atmospheric Composition)	X							
CFI-ISS-CC--022	Optical Communication Downlink							X	
CFI-ISS-CC--023	Occultation and Signal Reflection from Iss (OSIRIS)	X	X	X				X	
CFI-ISS-CC--024	Picosecond space lidar: new abilities for quantities EO.	X						X	

Prelim. Summary of 45 proposed Ideas received (2/2)

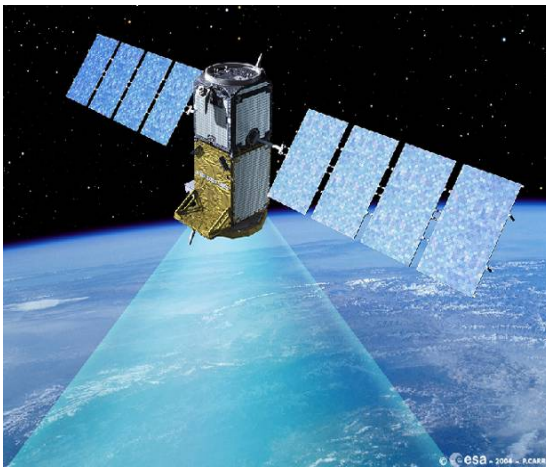
Proposal code	Title	Atmosphere	Ocean	Land Surface	Cryosphere	Solid Earth	Other Earth Sci & Education	Support/ Technology	Out of Scope
CFI-ISS-CC--025	ICARUS – A Global Small-Animal Tracking System ([International Cooperation for Animal Research Using Space]						X		
CFI-ISS-CC--026	Optical Infrared Experiment: Monitoring of Global Climate Change On Board ISS	X		X					
CFI-ISS-CC--027	Neutral Particle Analyser	X							
CFI-ISS-CC--028	Quantifying sub-Continental Carbon fluxes over the tropics and subtropics (QC2)	X							
CFI-ISS-CC--029	Compact hyperspectral imager for the study of land surface and land-ocean interactions		X	X					
CFI-ISS-CC--030	Long-term monitoring of climate observables using innovative space geodetic techniques aboard the ISS: Reflectometry, Scatterometry, and Radio Occultation ("GEROS-ISS") [Note: Derived from ESA-AO2004-143 & related Topical Team]	X	X	X			X	X	
CFI-ISS-CC--031	Modelling of Atmospheric Propagation for Earth Observation Systems (MAPEOS)							X	
CFI-ISS-CC--032	HYbrid system for autonomous power and Data handling in Remote sensing Applications	X							
CFI-ISS-CC--033	Gamma Ray Intense Flash Observatory	X							
CFI-ISS-CC--034	ISS EarthViewCam						X	X	
CFI-ISS-CC--035	PARIS experiment In the ISS		X	X					
CFI-ISS-CC--036	LOISS - Lightning Observation from ISS	X							
CFI-ISS-CC--037	Global Earth Observation with the JEM-EUSO experiment: observation of cloud cover, nightglows, Transient Luminous Effects such as plasma discharges and lightning. [Link to ESA-AO2009-1050 proposal]	X							
CFI-ISS-CC--038	Integrated active and passive optical micro-payload to study the seasonal response to climate forcing of mid-latitudes terrestrial ecosystems.			X					
CFI-ISS-CC--039	VITAL-ISE: Vegetation, In-land/coastal waters Territories and Atmospheric column monitoring by Lidar and fluorescence sensor - International Space station Experiment	X	X	X					
CFI-ISS-CC--040	Monitoring of Climate Relevant Trace Gases in the Upper Troposphere, Stratosphere and Mesosphere using Microwave Limb Sounding from the ISS	X							
CFI-ISS-CC--041	Gravity POTential Differences from ACES for validating ocean circulation and unifying height systems (PODIAC)		X			X			
CFI-ISS-CC--042	A Lidar onboard the ISS for tropical forest structure monitoring			X					
CFI-ISS-CC--043	SOLFAR: Solar Activity Monitoring using a Low Frequency Array Radio Interferometer						X		
CFI-ISS-CC--044	Radio Frequency Interference Experiment for Space Based AIS applications						X		
CFI-ISS-CC--045	Measuring sun-induced fluorescence on eddy covariance sites assessing the dynamic variation of gross primary productivity			X					

Interesting Thematic Area's / ideas groupings #1



➤ GNSS (global navigation satellite system) Reflectometry (GNSSR)

- GNSSR : this has been (and is being) prepared in Europe but not yet demonstrated its performance in-orbit; the challenge is the antenna accommodation, on the other hand the ISS offers the advantage of room for a large antenna
- 3 proposed ideas
 - **023:** Occultation and Signal Reflection from ISS (OSIRIS)
 - **030:** Long-term monitoring of climate observables using innovative space geodetic techniques aboard the ISS: Reflectometry, Scatterometry, and Radio Occultation ("GEROS-ISS")
 - **035:** PARIS Experiment on ISS (PAR-ISS)



Interesting Thematic Areas / ideas groupings #2

➤ Fluorescence and vegetation measurements

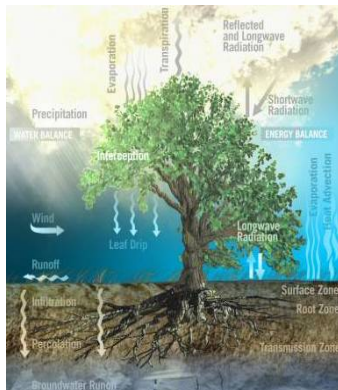
➤ Vegetation height lidars

➤ Hyperspectral Imagers:

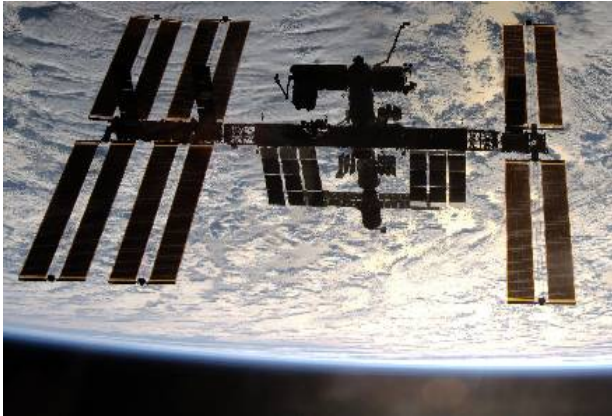
- High interest, but demanding accommodation (pointing, data rate,..);
- deltas wrt existing and planned missions (eg. EnMAP and PRISMA) and ISS advantages wrt free-flying platforms to be clearly elaborated.

➤ Thematic Area #2 ideas

- **038:** Integrated active and passive optical micro-payload to study the seasonal response to climate forcing of mid-latitudes terrestrial ecosystems.
- **039:** VITAL-ISE: Vegetation, In-land/coastal waters Territories and Atmospheric column monitoring by Lidar and fluorescence sensor - International Space station Experiment
- **045:** Measuring sun-induced fluorescence on eddy covariance sites assessing the dynamic variation of gross primary productivity.
- **020:** ISS – Vegetation Improving ECV time series, Upscaling of Flux Tower Measurement and enhancing GPP estimates.
- **042:** A Lidar onboard the ISS for tropical forest structure monitoring.



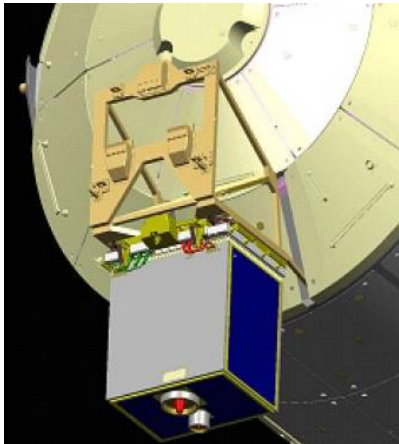
Interesting Thematic Areas / ideas groupings #3



➤ Atmospheric science

- **011:** SPEX: Multi-Angle Spectro-Polarimetry for Aerosol and Cloud Detection
- **018:** Compact atmospheric limb sounder for the retrieval of ozone, nitrogen dioxide and stratospheric aerosol vertical profiles.
- **028:** Quantifying sub-Continental Carbon fluxes over the tropics and subtropics (QC2)
- **040:** Monitoring of Climate Relevant Trace Gases in the Upper Troposphere, Stratosphere and Mesosphere using Microwave Limb Sounding from the ISS

Other interesting Ideas



- **Thermal IR for detection and characterisation of small fires**
 - **002:** COLFIRES: A MULTISPECTRAL THERMAL CAMERA FOR DETECTION AND MONITORING OF WILDFIRES, VULCANOES AND COAL FIRES ON A GLOBAL SCALE FROM THE COLUMBUS MODULE
- **Synthetic Aperture Radar of rain showers using geosynchronous satellite transmitter**
 - **014:** RainSAR
- **High resolution observation of artificial lighting**
 - **015:** Imaging Artificial Nighttime Lighting from Space
- **Gravity potential measurements using ACES (Atomic Clock Ensemble in Space) and ground based atomic clocks**
 - **041:** Gravity POTential Differences from ACES for validating ocean circulation and unifying height systems (PODIAC)