The Trans-Atlantic Training (TAT) initiative - coordination of training and science

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ESA-ESRIN

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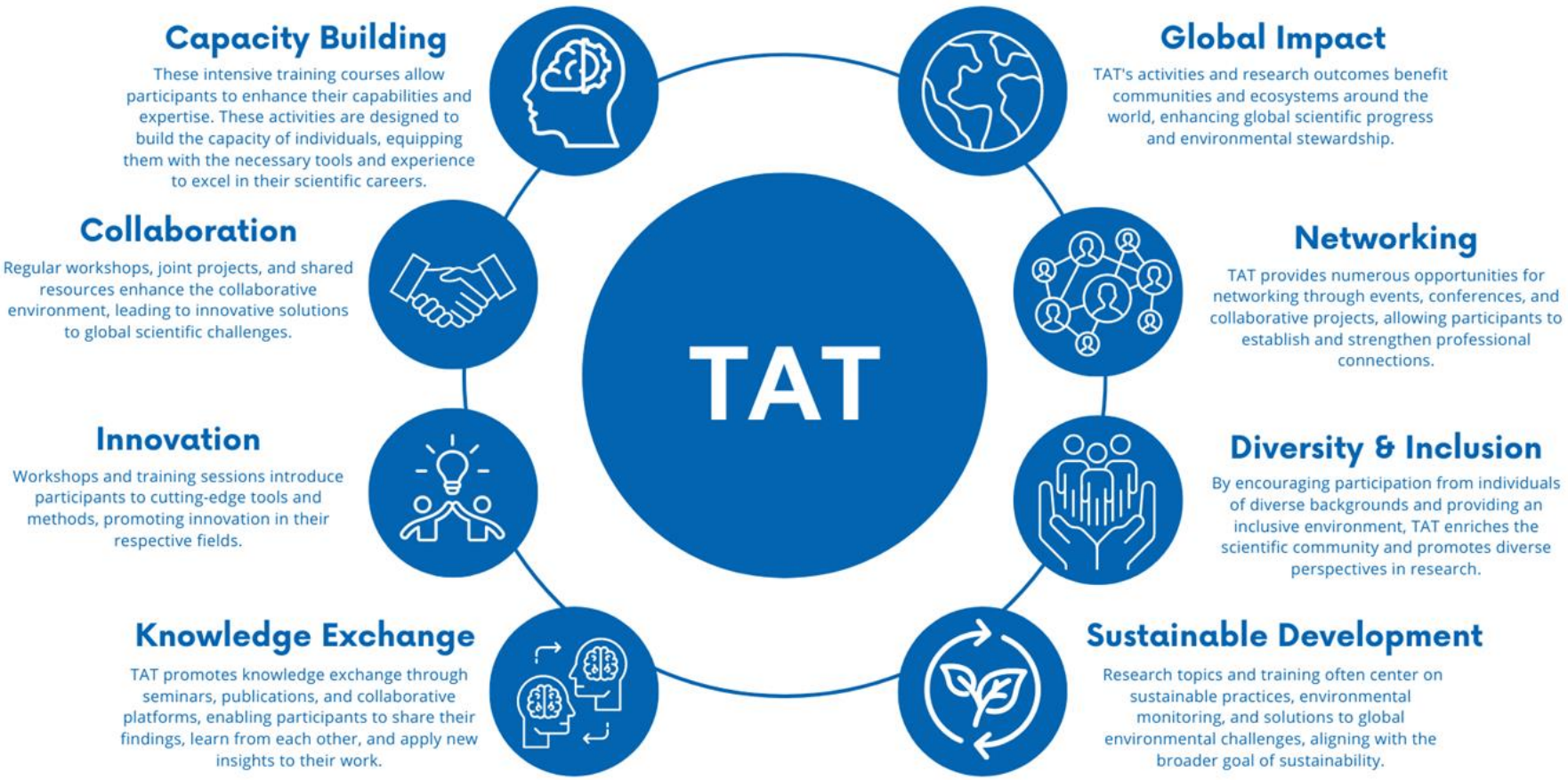
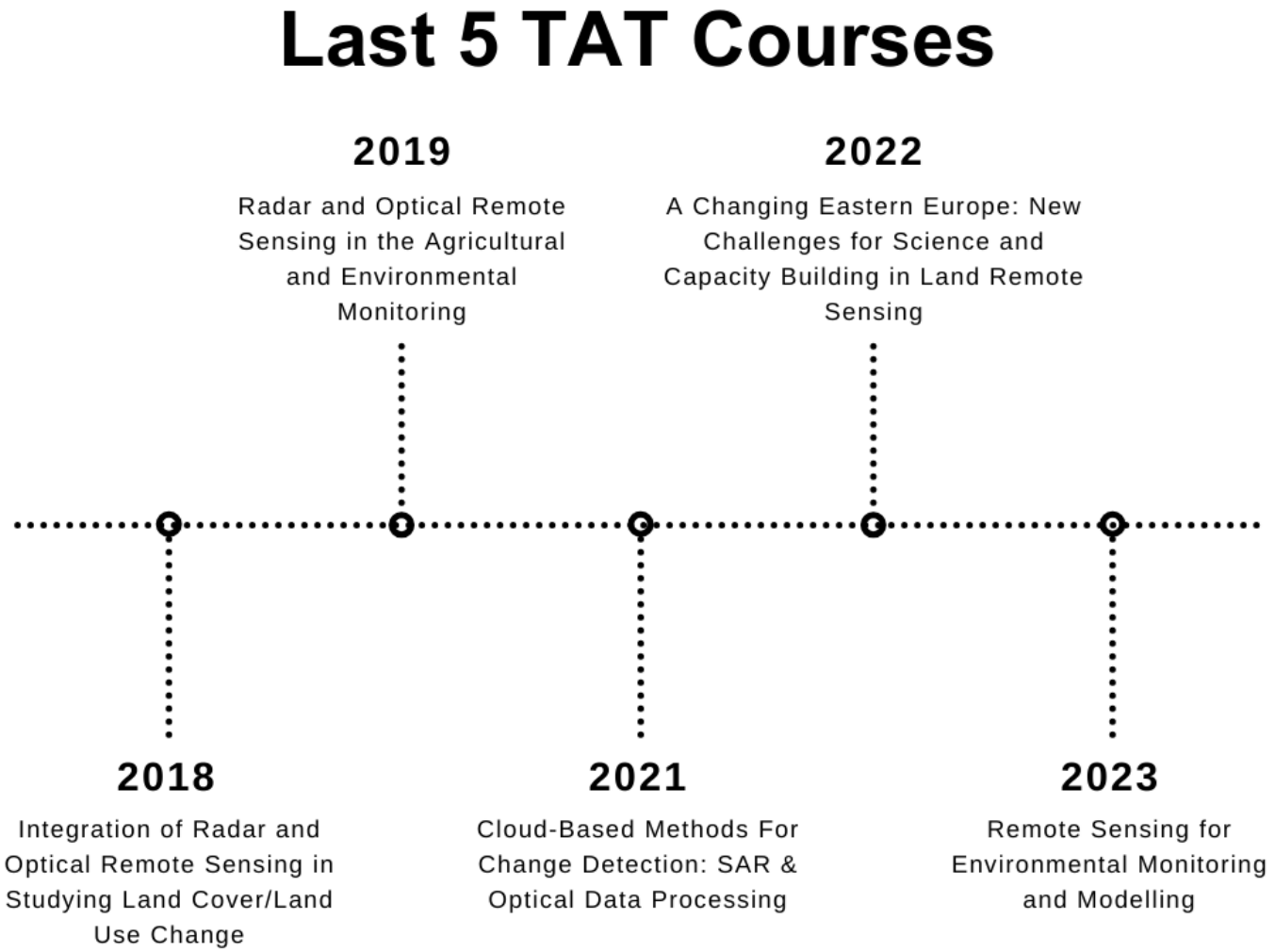
What is TAT?


Capacity Building
These intensive training courses allow participants to enhance their capabilities and expertise. These activities are designed to build the capacity of individuals, equipping them with the necessary tools and experience to excel in their scientific careers.
Collaboration
Regular workshops, joint projects, and shared resources enhance the collaborative environment, leading to innovative solutions to global scientific challenges.
Innovation
Workshops and training sessions introduce participants to cutting-edge tools and methods, promoting innovation in their respective fields.
Knowledge Exchange
TAT promotes knowledge exchange through seminars, publications, and collaborative platforms, enabling participants to share their findings, learn from each other, and apply new insights to their work.
TAT
Global Impact
TAT's activities and research outcomes benefit communities and ecosystems around the world, enhancing global scientific progress and environmental stewardship.
Networking
TAT provides numerous opportunities for networking through events, conferences, and collaborative projects, allowing participants to establish and strengthen professional connections.
Diversity & Inclusion
By encouraging participation from individuals of diverse backgrounds and providing an inclusive environment, TAT enriches the scientific community and promotes diverse perspectives in research.
Sustainable Development
Research topics and training often center on sustainable practices, environmental monitoring, and solutions to global environmental challenges, aligning with the broader goal of sustainability.

Past TAT events

History of TAT training:

- **TAT-1 2013 -** Prague, Czech Rep.
- **TAT-2 2014** - Krakow, Poland
- **TAT-3 2015** - Prague, Czech Rep.
- **TAT-4 2016** - Zvolen, Slovakia
- **TAT-5 2017** - Pecs, Hungary
- **TAT-6 2018** - Zagreb, Croatia
- **TAT-7 2019** - Novi Sad, Serbia
- **TAT-8 2021** - Thessaloniki, Greece (virtual)
- **TAT-9 2022** - Prague, Czech Rep.
- **TAT-10 2023 -** Prague and Brno, Czech Rep



Overview of TAT-11

Coordinators:

Chariton Kalaitzidis (MaiCH, Crete)

Connor Heeney (ESA, Italy)

Garik Gutman (NASA Land-Cover/Land-Use Change Program, US)

Overview of TAT-11

Time (EEST)	Sunday 14 July	Monday 15 July	Tuesday 16 July	Wednesday 17 July
8:30 - 9:00	Registration			
9:00 - 9:30	Welcoming speech of the local host + TAT-11 logistic	RS assessments in the war zone of Ukraine - **Sergii Skakun, Nataliia Kussul, Erik Duncan** & **Leonid Shumilo** (*University of Maryland*)	SCERIN/MEDRIN Plenary	Marine Geohazards in the Eastern Mediterranean Sea - **Paraskevi Nomikou** (*Professor of Geology at the National and Kapodistrian University of Athens*)
9:30 - 11:00	Introduction to SAR missions, radar remote sensing techniques and applications to Land, and interferometry principles - **Levente Ronczyk**			
11:00 - 11:30	*Coffee Break*			*Coffee Break*
11:30 - 13:30	cont.	Mapping of high, medium, or low-severity burned forest areas using airborne hyperspectral data (Theory + Practical) - **Olga Brovkina** (*Global Change Research Institute, CAS*)		Copernicus Assisted Inland Water Quality Emergency Monitoring Service - **Ioannis Manakos** (*Information Technologies Institute, Centre for Research & Technology Hellas*)
13:30 - 14:30	*Lunch Break*			*Lunch Break*
14:30 - 15:00	EO for land motion and earthquakes - **Michael Foumelis** (*Aristotle University of Thessaloniki*)	Machine learning applications in EO and hazards - **Mutlu Ozdogan** (*University of Wisconsin-Madison*)		Deep learning in fire mapping - **Dimitris Stavrakoudis** (*Aristotle University of Thessaloniki*)
15:00-16:00				EO data access from NASA, ESA, and other sources - **Dimitris Stavrakoudis** (*Aristotle University of Thessaloniki*)
16:00 - 16:30	*Coffee Break*			*Coffee Break*
16:30 - 18:00	cont. Practical	Machine learning methods in Google Earth Engine - **Mutlu Ozdogan** (*University of Wisconsin-Madison*)		Practical exercises in TIR detection and tracking of extreme events - **Dimitris Stavrakoudis** (*Aristotle University of Thessaloniki*)
1800 - 18:30				Diplomas and farewell

Connection to SCERIN-MEDRIN

- TAT is organised closely with SCERIN-MEDRIN
- Mutual goal of capacity building in relation to understanding land-use change and ecosystem processes
- Allows for cross-collaboration to occur between the events

What is the future of TAT?

Broaden the focus of training

Incorporate novel data

Expand organisational collaboration

Integrate industry

Broadening the Focus of Training

- Constrained to focusing on land cover change and ecosystem dynamics
- Add dedicated sessions for the atmosphere and hydrosphere
- It will allow students to get a more holistic understanding of the world in which they are studying

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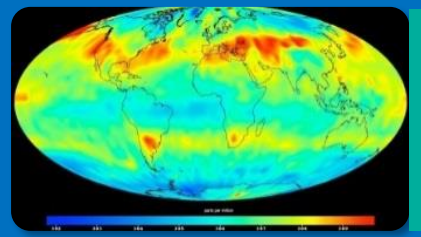
Incorporating Novel Data

- Data from upcoming missions such as **CHIME, GLIMR, NISAR, BIOMASS**
- Exposure to cutting-edge technology
- Potential to inspire students about the future of EO and its capabilities

- Increase utilisation of LiDAR in these TAT courses

Sentinel Expansion Missions

CO2M - Anthropogenic CO_2 Monitor



Causes of
Climate Change

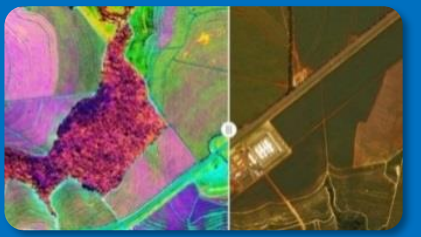
LST – Land Surface Temperature Mission

Agriculture & Urban
Management

CRISTAL – Polar Ice & Snow Topography

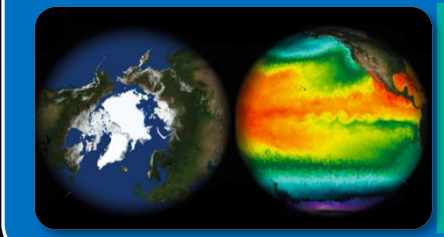
Effects of
Climate Change

CHIME – Hyperspectral Imaging Mission



Food Security, Soil,
Minerals, Biodiversity

CIMR – Passive Microwave Radiometer

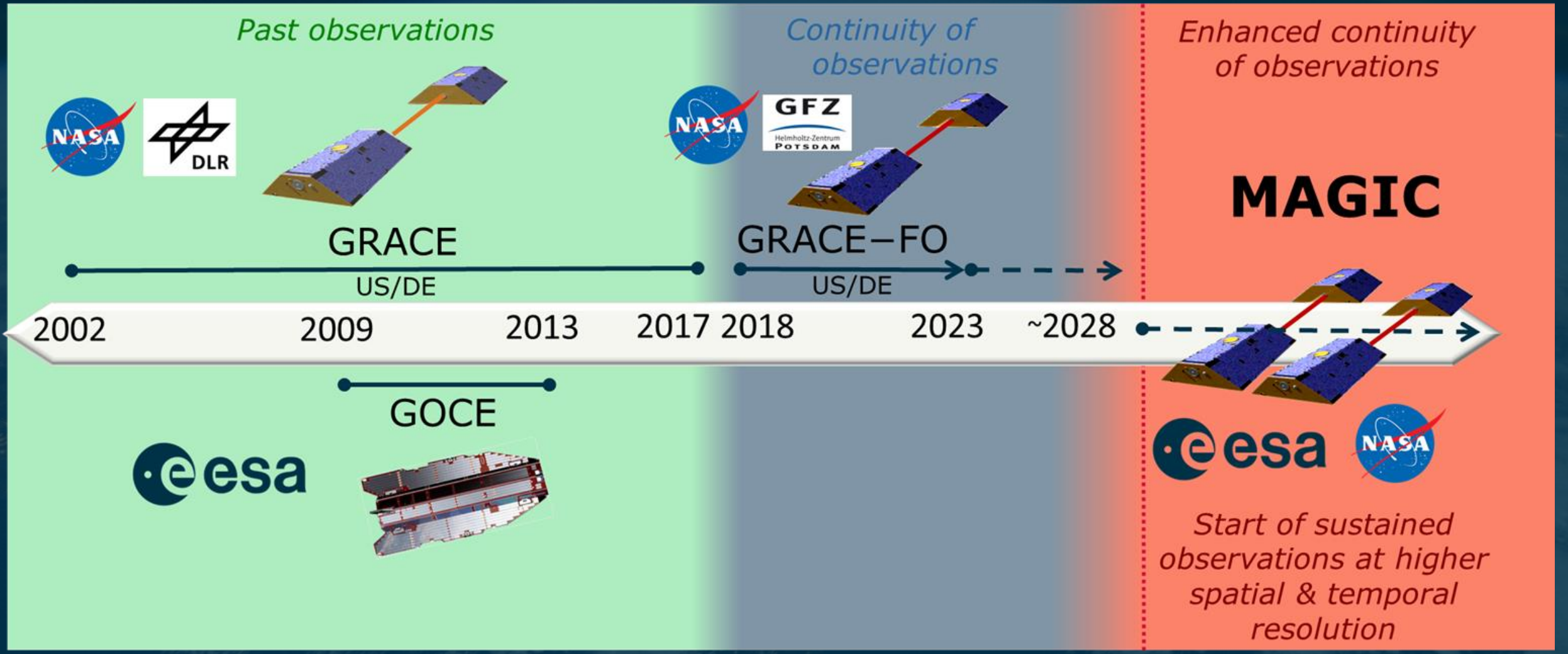


Sea: Surface Temp.
& Ice Concentration

ROSE-L – L-band SAR Mission

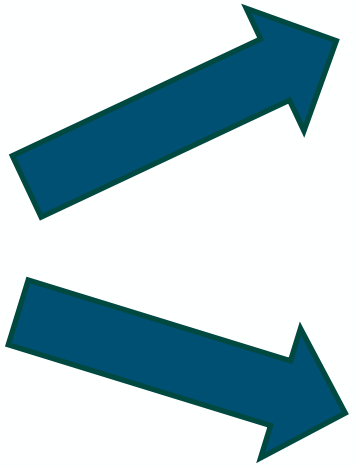
Vegetation & Ground
Motion & Moisture

MAGIC – Joint ESA-NASA Mission for Satellite Gravimetry



Expanding Organisational Collaboration

- Involve South American organisations/initiatives
- By broadening the involvement of organisations, it will provide students with the opportunity to be exposed to more varied research
- Cross-cultural collaboration between researchers and students



South American:

- CONAE – Argentinian Space Agency
- RedLaTIFF – GOFC-GOLD representative
- INPE – Brazilian institute for space

European:

- United Nations (e.g., FAO)
- EUMESTAT
- ECMWF
- Met Office

Integrating Industry

- Real-world applications
- Showcases the direction that industry is taking
- Allows for networking opportunities
- Improves overall awareness of potential career paths in the industry for students

Some example recommendations:

- Kuva Space
- Argans
- Sylvera
- GHGSat
- ICEye
- SatVu
- Raymetrics