

→ 2nd ADVANCED COURSE ON RADAR POLARIMETRY

# Course introduction & organisation

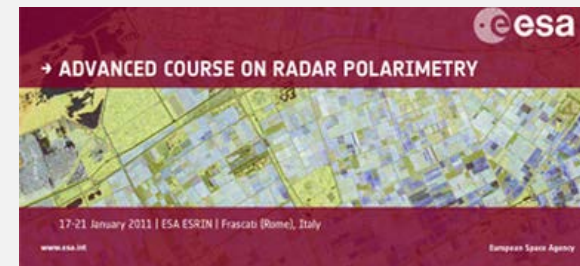
Yves-Louis Desnos & Andrea Minchella

EO Science, Applications and New Technologies Department

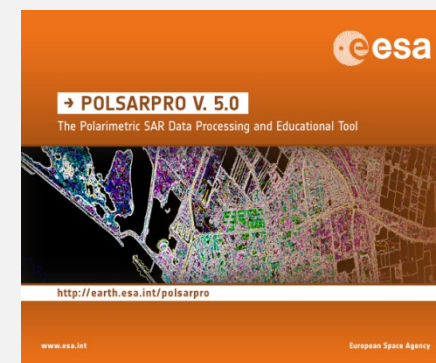
European Space Agency ESRIN, Frascati - ITALY

- Action of SEOM (Scientific Exploitation of Operational Missions) element of EOEP-4 program
- Training the next generation of Principal Investigators (PIs)
- Introducing available tools and methods for the exploitation of ERS, Envisat, TPM and Explorers satellite data
- Stimulating and supporting the exploitation of ESA EO and Third party Mission remote sensing data for ocean, land and atmospheric applications

Second Time time ESA is organising a one week course on Radar Polarimetry

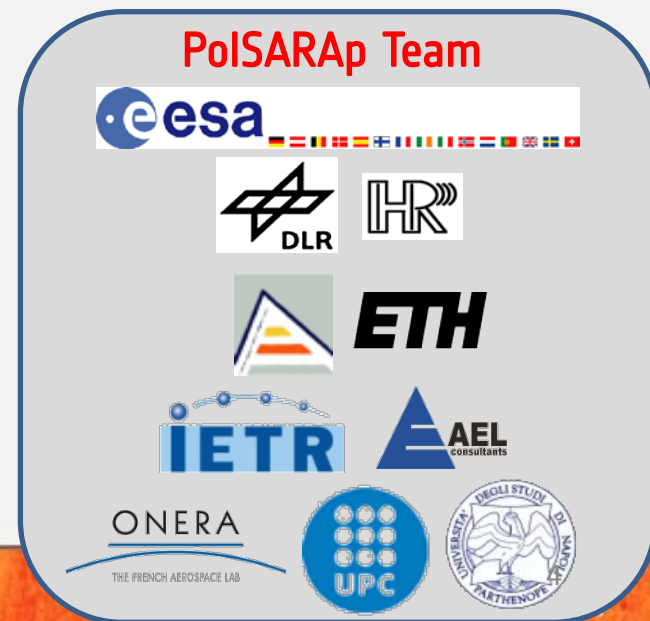


- Explain Polarimetry theoretical principles, processing algorithms, data products and their use in applications
- Provide first-hand and up-to-date information on the state of the art in Radar Polarimetry and Polarimetric SAR Interferometry
- Expose students to hands-on computing exercises specific on PolSAR and Pol-InSAR data processing for RS applications.
- Illustrate the use of PolSARpro, the ESA Toolbox for exploitation of EO SAR polarimetric data, with a focus on full-pol spaceborne (ALOS, RADARSAT-2, TerraSAR-X) products.





- ESA providing access to ALOS data for European, Middle East, African PIs
- Thematic workshop: **POLinSAR**
- ESA organising campaigns to collect Polarimetric data for future mission preparation (**AGRISAR** campaign for SENTINEL 1), CSA/ESA **SOAR EU**
- **PoISARAP** (Exploitation of Fully Polarimetric SAR Data for Application Demonstration) study
- Plans for **Publication** in 2013



## POLSARPRO

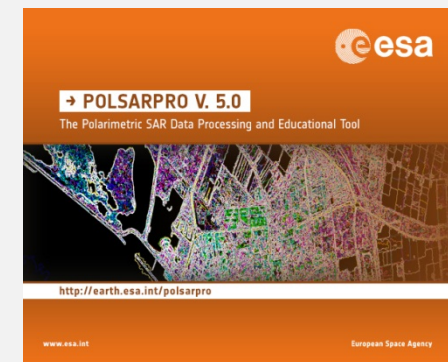


- The development of POLSARPRO Software is a direct result of recommendations made during the POLinSAR Workshops held at ESA-ESRIN in January 2003.
- Developed under ESA Contract to be accessible to a wide range of users from novices to experts in the field of POLSAR and POL-InSAR
- Educational Software offering a tool for self-education in the field of **POLSAR** and **POL-InSAR** data processing and analysis

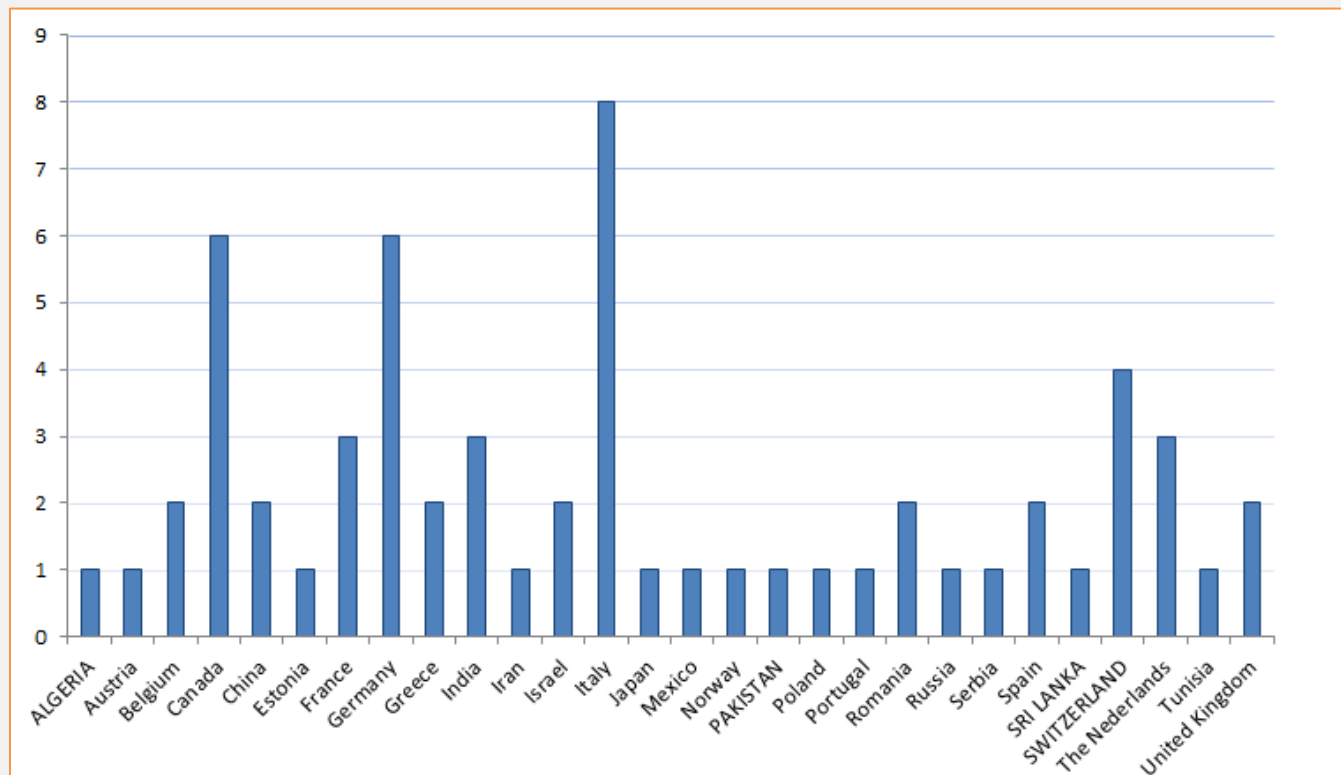
## Supported Polarimetric SAR datasets

Airborne	Spaceborne
AIRSAR & TOPSAR	SIR-C
EMISAR	Envisat ASAR
E-SAR	RADARSAT-2
Pi-SAR	ALOS PALSAR
SAR580-Convair	TerraSAR-X
RAMSES, UAVSAR etc.	Tandem-X, Cosmo-SkyMed etc.

<http://earth.esa.int/polsarpro>



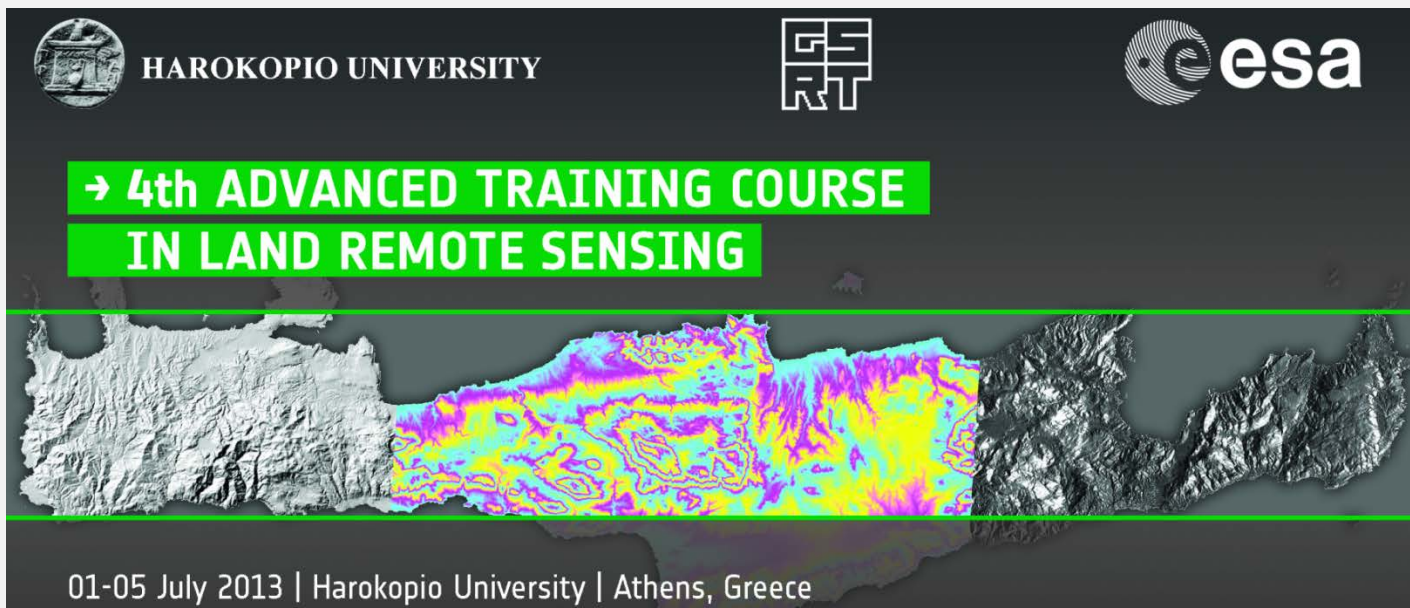
- 60 selected participants
- Education levels: 8% MSc, 48% PhD student, 44% PostDoc/Researcher/Professor
- 26 different nationalities represented







- 72 Oral presentations, 67 Posters
- ~ 170 participants
- Reporting state of the art and exploitation of PolSAR data at X,L,C band



HAROKOPIO UNIVERSITY

GFRT

esa

→ 4th ADVANCED TRAINING COURSE  
IN LAND REMOTE SENSING

01-05 July 2013 | Harokopio University | Athens, Greece

- Participation limited to 60 students and subject to selection of application
- On-line Application deadline **28 February 2013**

<https://earth.esa.int/landtrainingcourse2013>



	Monday 21 DAY 1	Tuesday 22 DAY 2	Wednesday 23 DAY 3	Thursday 24 DAY 4	Friday 25 Day 5
	<b>Registration (8:30 - 9:00)</b>				
9:00 - 9:30	<b>Course intro. &amp; organisation</b> <i>Yves-Louis Desnos &amp; Andrea Minchella (ESA)</i>	<b>ESA EO Programs</b> <i>Yves-Louis Desnos (ESA)</i>	<b>ESA SENTINEL-1 Mission</b> <i>Pierre Potin (ESA)</i>	<b>TerraSAR-X-TanDEM-X</b> <i>Prof. I.Hajnsek (DLR, Germany)</i>	<b>Recent Advances in Theory and Applications of Radar Polarimetry</b> <b>Speckle Modelling</b> <i>Dr. Carlos Lopez-Martinez, UPC - Spain (8:30 - 9:20)</i> <b>Urban: Classification and 3D rendering</b> <i>Dr. Elise Koeniguer, ONERA - France (9:20 - 10:10)</i>
9:30 - 11:00	<b>PoISAR Basic Concepts</b> <i>Dr. Laurent Ferro-Famil (University of Rennes 1, France)</i>	<b>PoISAR Advanced Concepts</b> <i>Dr. Laurent Ferro-Famil</i>	<b>Pol-InSAR Intro &amp; Basics</b> <i>Prof. Shane R Cloude (AEL, UK)</i>	<b>PoISAR - Surface Parameters Estimation Intro &amp; Basic</b> <i>Prof. Irena Hajnsek</i>	<b>Tackling temporal decorrelation in repeat-pass polarimetric interferometry</b> <i>Dr. Marco Lavallo, Jet Propulsion Laboratory (10:10 - 10:50)</i>
11:00 - 11:30	Coffee Break				Coffee Break
11:30 - 13:50	<b>PoISAR Basic Concepts</b> <i>Dr. Laurent Ferro-Famil</i>	<b>NEST 4C Overview</b> <b>The link between PoISARpro &amp; NEST</b> <i>Andrea Minchella (RSAC c/o ESA)</i>	<b>Pol-InSAR Advanced Concepts</b> <i>Prof. Shane R Cloude</i>	<b>PoISAR - Surface Parameters Estimation Advanced Concepts</b> <i>Prof. Irena Hajnsek</i>	<b>Recent Advances in Theory and Applications of Radar Polarimetry</b> <b>Multi Baseline - PolInSAR</b> <i>Dr. Stefano Tebaldini, POLIMI - Italy (11:20 - 12:10)</i> <b>PolInSAR Modelling</b> <i>Dr. Konstas Papathanassiou, DLR - Germany (12:10 - 13:00)</i> <b>Agriculture: Phenology monitoring and Soil moisture retrieval</b> <i>Dr. Juan M. Lopez-Sanchez, University of Alicante -Spain (13:00 - 13:50)</i>
13:50 - 15:00	Lunch				Lunch
15:00 - 16:30	<b>PoISARpro Overview</b> <i>Dr. Laurent Ferro-Famil</i>	<b>PoISAR Practical PoISARpro / Land Cover</b> <i>Dr. Laurent Ferro-Famil</i>	<b>Pol-InSAR Practical Biomass Estimation</b> <i>Prof. Shane R Cloude</i>	<b>PoISAR Practical Surface Parameters Estimation</b> <i>Prof. Irena Hajnsek</i>	<b>Future Mission</b> <i>Nuno Miranda, ESA (15:00 - 15:30)</i> <b>Future perspective on Radar Polarimetry and its Applications</b> <b>Keynote address</b> <i>Dr. Wolfgang-Martin Boerner Professor Emeritus and Director UIC-ECE Communications, Sensing &amp; Navi. Labs (15:30 - 16:30)</i>
16:30 - 17:00	Coffee Break				
17:00 - 18:30	<b>PoISARpro General Practical</b> <i>Dr. Laurent Ferro-Famil</i>	<b>PoISAR Practical PoISARpro / Time-series analysis</b> <i>Dr. Laurent Ferro-Famil</i>	<b>Pol-InSAR Practical Biomass Estimation</b> <i>Prof. Shane R Cloude</i>		<b>Closing Session (16:30 - 17:00)</b>
	<b>Welcome Cocktail (18:30 - 19:30)</b>				



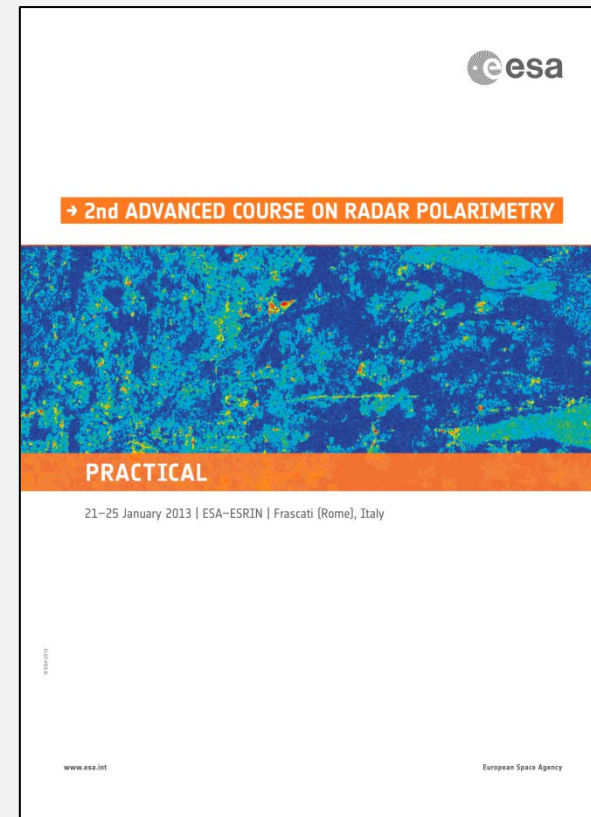
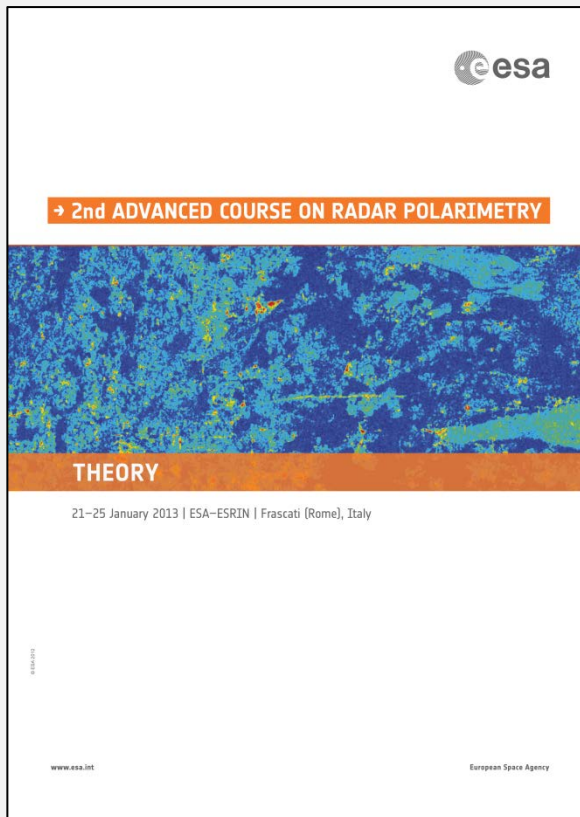
## 9 leading scientists from 6 Countries

- Dr. Laurent Ferro-Famil
- Dr. Shane Cloude
- Prof. Irena Hajnsek
- Dr. Carlos Lopez-Martinez
- Dr. Konstantinos Papathanassiou
- Dr. Marco Lavallo
- Dr. Stefano Tebaldini
- Dr. Elise Koeniguer
- Dr. Juan M. Lopez-Sanchez

## 3 invited experts

- Prof. Wolfgang-Martin Boerner
- Pierre Potin (ESA)
- Nuno Miranda (ESA)

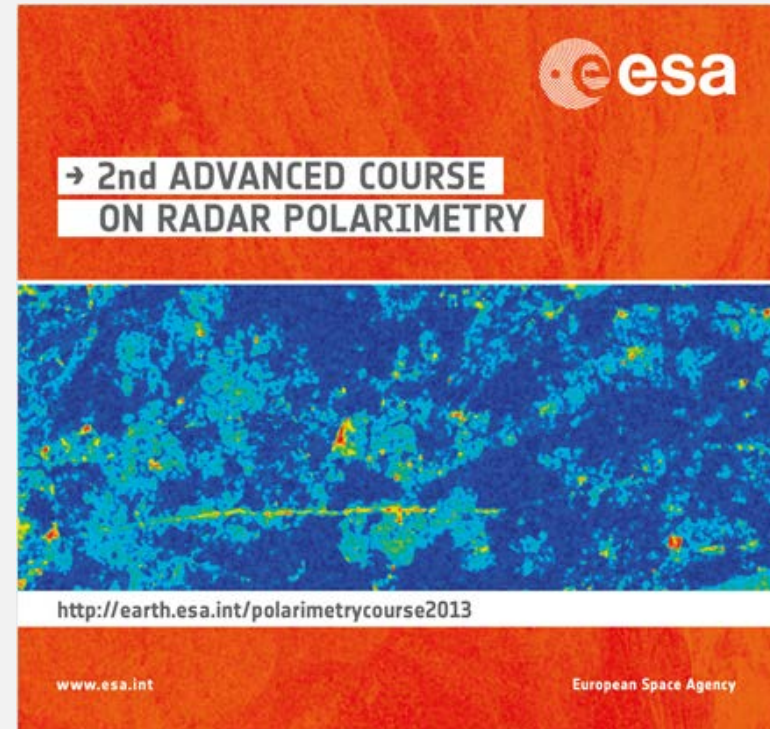
- **Theory and Practical Manuals** (Lectures from Monday to Friday)

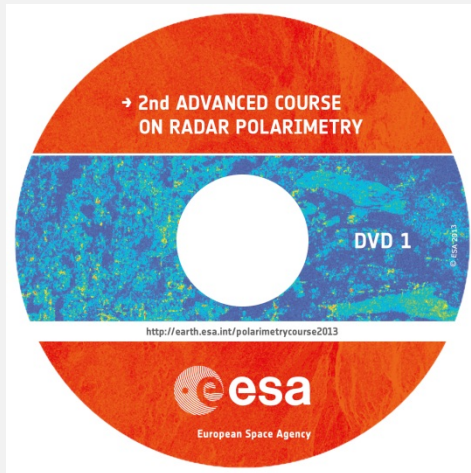




## 2 DVDs package

- Programme of the Course
- PolSARpro, NEST and third party SW
- Theory lectures
- Practical lectures
- EO Data for hands-on sessions





## DVD 1

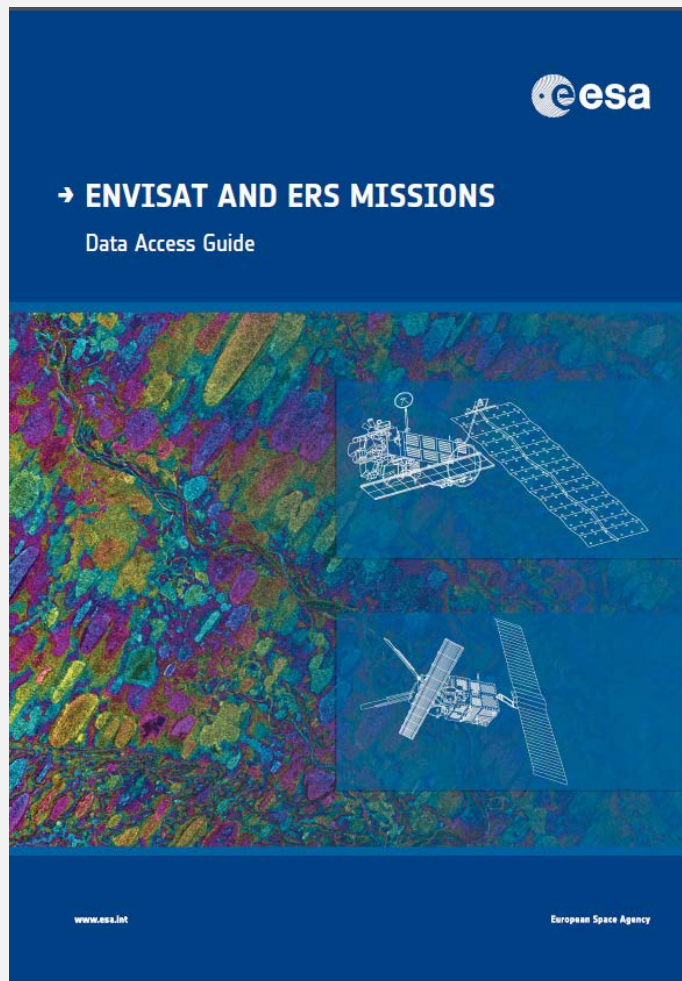
- PolSARpro, NEST and Third party SW
- Monday - Tuesday (Theory, Practicals & Data)



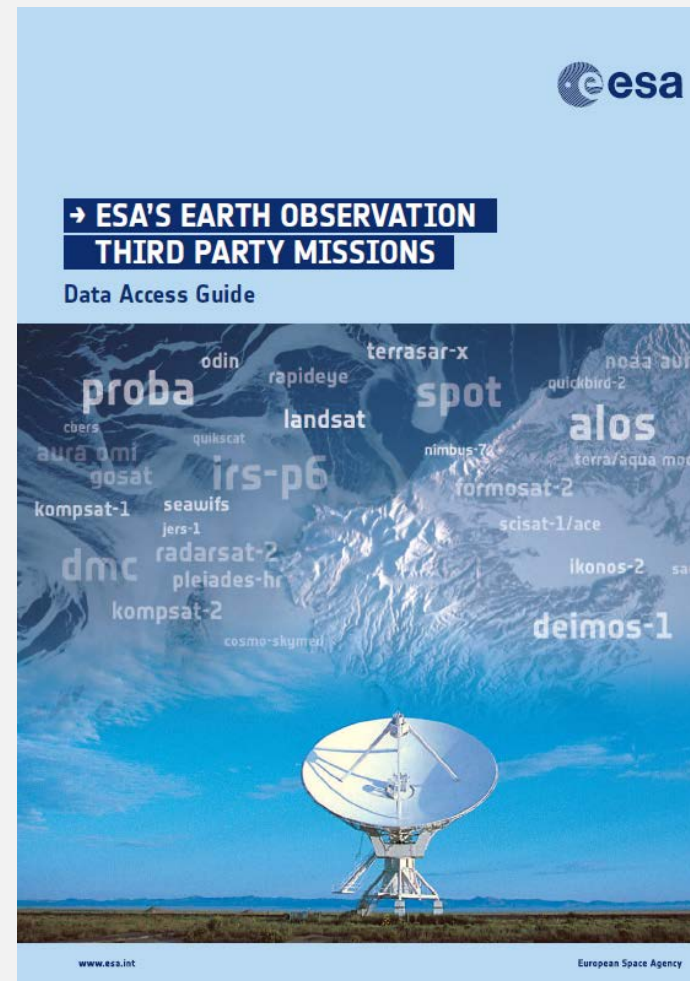
## DVD 2

- Wednesday – Thursday – Friday (Theory, Practicals & Data)





[https://earth.esa.int/c/document\\_library/get\\_file?folderId=13019&name=DLFE-570.pdf](https://earth.esa.int/c/document_library/get_file?folderId=13019&name=DLFE-570.pdf)



[https://earth.esa.int/c/document\\_library/get\\_file?folderId=13019&name=DLFE-744.pdf](https://earth.esa.int/c/document_library/get_file?folderId=13019&name=DLFE-744.pdf)



- Training course material updated on website (mid of February)
- Web recording of some Theory lectures of the course
- The Registration Desk will be open every morning from 8:30 to 9:00 for the whole week
- In case of any need please ask the team (Ms. Ulla Vayrynen or Andrea Minchella)



*Enjoy the training!*