The 2010 training course will be dedicated to land remote sensing theory and applications.

Daily programme

ESA – MOST Dragon 2 Programme

Advanced Training Course in Land Remote Sensing, CAREERI Lanzhou P.R. China

Daily Programme, 6 to 11 Sept. 2010

Monday 6 September 2010

08:30-09:00	***REGISTRATION (OUTSIDE Of Floor 7, No. 3 Bldg., CAREERI)***		
9:00-9:30	Introduction and opening		*Officials*
	CAREERI		*Prof. & Academician Cheng Guodong*
	NRSCC		*Mr. Zhang Guocheng*
	Gansu Provincial Science & Technology Dept.		*Mr. Zhang Rende*
	ESA		*Dr. Yves-Louis Desnos*
09:30-10:00	Overview of the training		*Dr. Andy Zmuda*
10:00-10:30	***Coffee break and photo call (group picture)***		
10:30-11:15	ESA EO missions for land remote sensing	**D1L1**	*Dr. Yves-Louis Desnos*
11:15-12:00	Chinese EO missions for land remote sensing	**D1L2**	*Prof. Guo Jianning*
12:00-13:30	***Lunch***		
Overview of Relevant EO Instruments and Data Exploitation			
13:30-14:30	**Optical range**: MERIS and PROBA-CHRIS Beijing-1, CBERS and HJ1A	 **D1L3a** **D1L3b**	 *Prof. Wout Verhoef* *Prof. Guo Jianning*
14:30-15:30	**Thermal range**: (A)ATSR	 **D1L4a**	 *Prof. Bob Su*

	CBERS, HJ1-B, FY	**D1L4b**	*Prof. Guo Jianning*
15:30-16:00	***Coffee break***		
16:00-17:00	**Microwave 1:** (A)SAR and ALOS-PALSAR HJ1C	 **D1L5a** **D1L5b**	 *Dr. Yves-Louis Desnos* *Prof.Guo Jianning*
17:00-18:00	**Microwave 2:** SMOS-MIRAS and (A)SCAT	 **D1L6**	 *Prof. Bob Su*
18:30 -20:30	***Welcome Banquet (all participants) VENUE: Xibei Hotel, TBC***		

Tuesday 7 September 2010

EO Data Access and Land Applications Projects			
8:30-9:15	ESA and TPM instrument data access	**D2L1**	*Dr. Andy Zmuda*
9:15-10:00	Access to Chinese EO data: HJ, CBERS and Beijing-1	**D2L2**	*Prof. Guo Jianning*
10:00-10:30	***Coffee break***		
10:30-12:15	Review of Land Projects (10mn each): Snow parameters from SAR Dragon 2 id. 5319 CO2 in Crop lands Dragon 2 id. 5344 POLINSAR Dragon 2 id. 5264 Wetlands Dragon 2 id. 5297 Terrain motion Dragon 2 id. 5305 Crustal deformation Dragon 2 id. 5341 Drought	**D2L3** **D2L3a** **D2L3e** **D2L3f** **D2L3g** **D2L3h** **D2L3i** **D2L3j**	*Lecturers* *Prof. Shi Jiancheng* *Dr. Thuy Le Toan* *Prof. Eric Poittier* *Dr. Herve Yesou* *Prof. Fabio Rocca* *Dr. Sun Jianbao* *Prof. Bob Su*
12:15-13:30	***Lunch***		
Basics theory (split session, SAR)			
	(SAR students-Optical/Thermal basics)	*(Optical students-SAR basics)*	
13:30-14:30	**D2L4a** Radiative transfer basics *Prof. Wout Verhoef*	**D2L4b** Introduction to SAR remote sensing *Dr. Thuy Le Toan*	
14:30-15:30	**D2L5a** Atmospheric corrections and parameter retrieval *Prof. Wout Verhoef*	**D2L5b** Introduction to InSAR *Asst. Prof. Daniele Perissin*	
15:30-16:00	***Coffee break***		
16:00-17:00	**D2L6a** Surface Energy Balance Basics *Prof Bob Su*	**D2L6b** Polarimetry Basics *Prof. Eric Pottier*	
17:00-18:00	Snow parameters from SAR	**D2L7**	*Prof. Shi Jiancheng*

Wednesday 8 September 2010

Advanced theory (split session)		
	(SAR students-Advanced SAR)	*(Optical students - Advanced Optical/Thermal)*
8:30-10:00	**D3L1a** Advanced interferometry *Asst. Prof. Daniele Perissin*	**D3L1b** Radiative transfer and retrievals *Prof. Wout Verhoef*
10:00-10:30	***Coffee break***	
10:30-12:00	**D3L2a** Advanced Polarimetry *Prof. Eric Pottier*	**D3L2b** Surface Energy Balance System *Prof. Bob Su*
12:00-13:30	***Lunch***	
Introduction to software tools (x2 classes ~30 trainees)		
13:30-14:30	**D3P1a** BEAM	**D3P1b** POLSARPRO

	Dr. Andy Zmuda	*Prof. Eric Pottier*
14:30-15:30	**D3P2a** NEST *Dr. Andy Zmuda*	**D3P2b** POLSARPRO Advanced *Prof. Eric Pottier*
15:30-16:00	***Coffee break***	
16:00-17:00	**D3P1b (repeat)** POLSARPRO *Prof. Eric Pottier*	**D3P1a (repeat)** BEAM *Dr. Andy Zmuda*
17:00-18:00	**D3P2b (repeat)** POLSARPRO Advanced *Prof. Eric Pottier*	**D3P2a (repeat)** NEST *Dr. Andy Zmuda*

Thursday 9 September 2010

Land Applications Lectures			
08:30-09:30	SAR Image Properties	**D4L1**	*Dr. Thuy Le Toan*
09:30-10:30	Application of EO Data for Flood Monitoring	**D4L2**	*Dr. Hervé Yésou*
10:30-11:00	***Coffee break***		
11:00-12:00	Urban Development Monitoring	**D4L3**	*Prof. Gong Peng*
12:00-13:30	***Lunch***		
Practical Session			
13:30-15:30	Urban Development Monitoring	**D4P1**	*Prof. Gong Peng*
15:30-16:00	***Coffee break***		
16:00-17:00	Agriculture SAR (wheat & maize mapping)	**D4L4**	*Prof. Christiane Schmullius*
Practical Session			
17:00-18:30	SAR Practical for Agriculture (wheat & maize mapping)	**D4P2**	*Prof. Christiane Schmullius*

Friday 10 September 2010

Land Applications Lectures			
09:00-10:30	Forest mapping using SAR	**D5L1**	*Prof. Christiane Schmullius*
10:30-11:00	***Coffee break***		
11:00-12:00	Land use and change detection- desertification	**D5L2**	*Prof. Liu Jiyuan, presented by Dr. Deng Xiangzheng*
12:00-13:30	***Lunch***		
Land Applications Lectures			
13:30-15:30	Forest Mapping using SAR	**D5L2.5a** **D5L2.5b**	*Prof. Christiane Schmullius* *Dr. Thuy Le Toan*
15:30-16:00	***Coffee break***		
16:00-17:00	Water availability	**D5L3**	*Prof. Bob Su*
17:00-18:00	Terrain motion	**D5L4**	*Dr. Sun Jianbao*
18:30-20:30	***Banquet (all participants) VENUE: Xibei Hotel, TBC***		

Saturday 11 September 2010

Land Applications Practical Sessions		
08:30-11:00	**D6P1a** Water Resources *Prof. Bob Su*	**D6P1b** Terrain motion using PSInSAR *Asst. Prof. Daniele Perissin & Dr. Zhiying Wang*
11:00-11:15	***Move to CAREERI for closing ceremony***	
11:15-11:30	***Coffee Break at CAREERI Floor 3, No. 6 Bldg.***	
11:30-11:45	***Training Course Summary***	
11:45-12:15	***Certificate Ceremony***	
12:15-12:20	***Closing Words***	

Lecture Practical

The programme is organized around four main components:

Theoretical fundamentals:

- SAR remote sensing: basic principles, interferometry, polarimetry and polarimetric interferometry
- Optical remote sensing: Radiative transfer, atmospheric corrections, parameters retrieval, modelling

- Thermal remote sensing: Surface Energy Balance

EO missions and products:

- ESA: (A)SAR, MERIS, (A)ATSR
- China: CBERS, Beijing-1, FY, HJ
- TPM: ALOS, CHRIS Proba

EO land applications lectures:

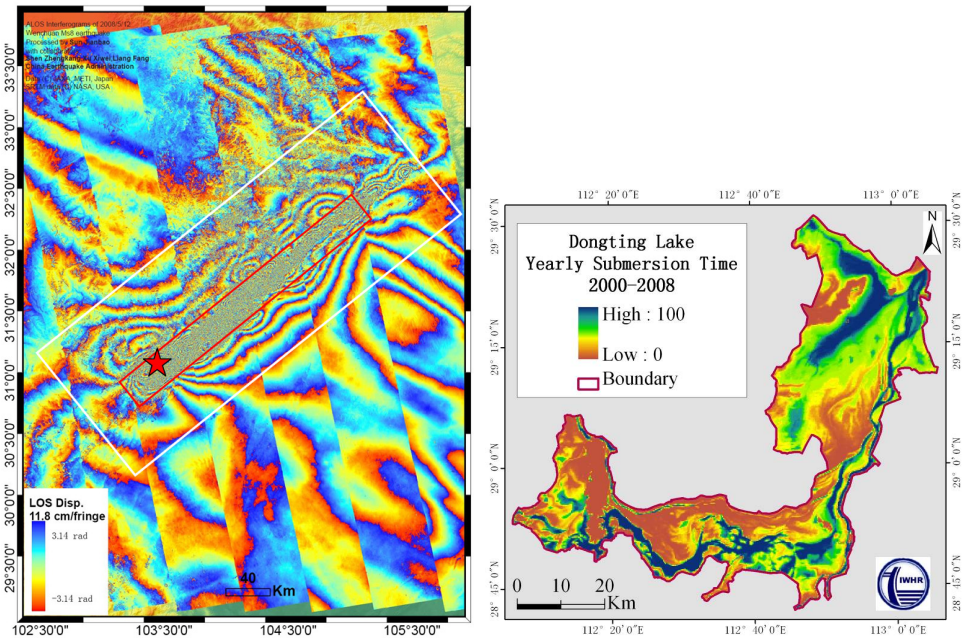
- Land applications for Land Use and Land Cover including forest mapping & retrievals, dry land cropping and desertification
- Glacier mapping and snow parameter retrieval using SAR data
- Disaster monitoring applications: Floods and terrain motion using InSAR and PSInSAR
- Soil moisture and droughts
- Urbanisation

Practicals:

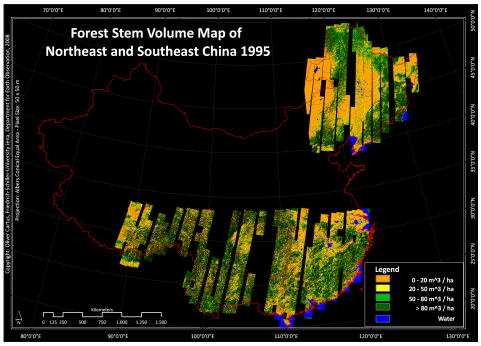
- Introduction to ESA toolboxes: BEAM, NEST, POLSARPRO
- Land resources monitoring including forests, dry land cropping and desertification
- Glacier mapping and snow parameter retrieval using SAR data
- Terrain motion
- Soil moisture and droughts
- Urbanisation

All components will be addressed using **SAR, POLInSAR** and **Optical/Thermal** remote sensing data.

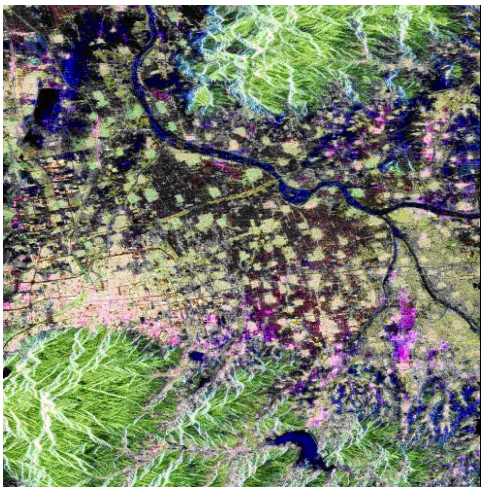
Product and imagery examples.

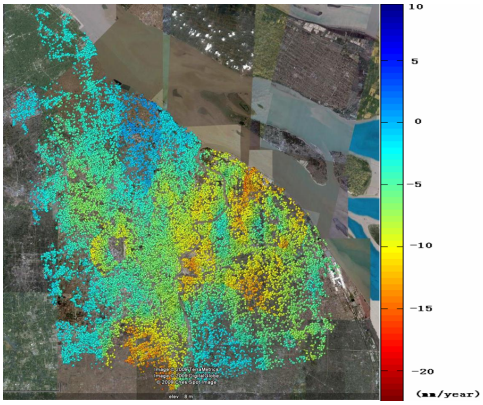


Left: Deformation map of Wenchuan earthquake from ALOS PALSAR data, Dragon 2 project id: 5305
Right: Hydrological modelling of average submersion time, Dragon 2 project id: 5264



Forest biomass derived From ERS SAR tandem mission data from mid 1990s, Dragon 2 project id. 5314





Left: ALOS PALSAR pauli-vector colour coded image, Culai test site, China, Dragon 2 project 5344

Right: Annual subsidence map of Shanghai, 2008 Dragon 2 project 5297