ESA - MOST Dragon 2 Programme

2011 DRAGON 2 SYMPOSIUM

中国科技部-欧洲空间局合作 "龙计划"二期

"龙计划"二期2011年学术研讨会

Part 1: Dragon 2 Programme Status after 3 years

Dragon 2 programme coordinators

Li Zengyuan & Gao Zhihai for NRSCC

Yves-Louis Desnos, & Andy Zmuda for ESA

Dragon 2 Programme

- **Science and application development**
  - **Background, Objectives**
  - **Project thematics**
  - **Data available via Dragon 2 and test sites**
- Results and reporting
  - Symposia, Dragon website
  - Brochures, Joint Scientific Publications ESA SP
- Dragon training and academic exchanges
  - Advance training courses, Young scientists
  - Academic exchanges
- Dragon 2 results

Dragon 2 Background

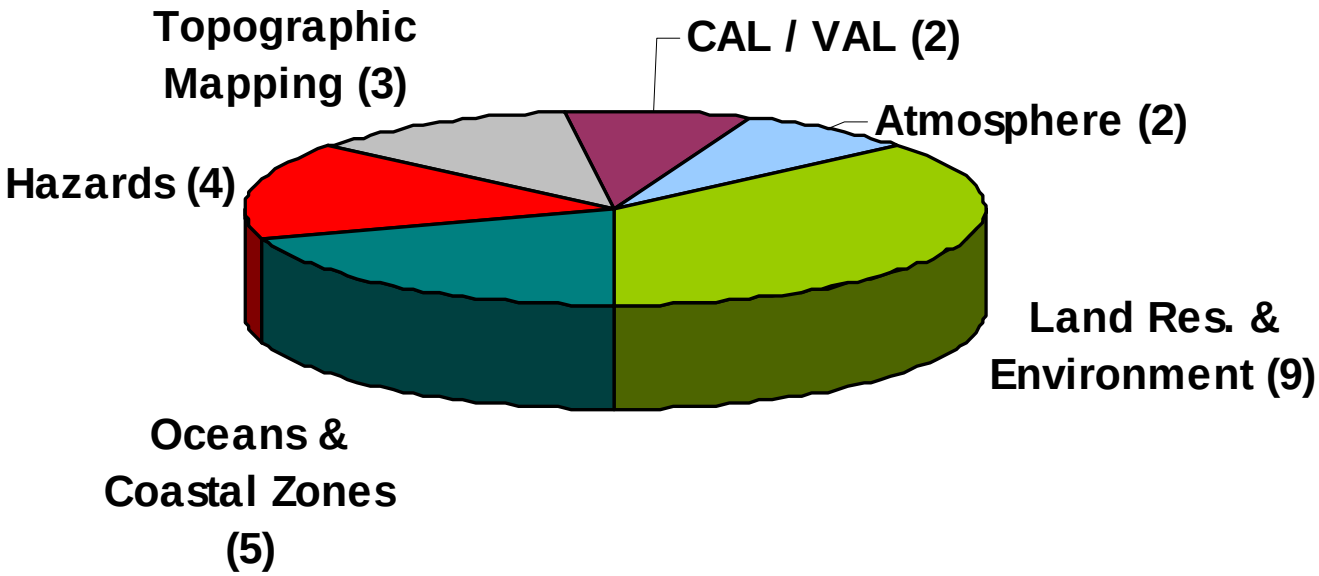
- Following success of Dragon 1 (2004 – 2008) ESA and MOST decided to continue and enlarge the programme (Dragon 2)
- A Dragon 2 Announcement of Opportunity approved by ESA/PB-EO and NRSCC/MOST
- Dragon 2 programme covering period 2008-2012

Objectives

- **Promote the exploitation of ESA, TPM and Chinese EO data**
  - *for science and application development*
- **Stimulate scientific exchange**
  - *by the formation of joint Sino-European teams*
- **Publish co-authored results**
  - *at the mid term (2010) & end of the programme (2012)*
- **Provide training to European and Chinese scientists**
  - *for exploiting ESA, TPM and Chinese EO data in land, ocean and atmospheric applications*

Thematics for Dragon 2 projects

25 joint project teams investigating land, ocean and atmospheric applications



EO Satellites and Instruments
(under Dragon 2 AO)

ESA & TPM EO data

Satellite	Instruments
ENVISAT	Advanced Along Track Scanning Radiometer (AATSR) SCanning Imaging Absorption SpectroMeter for Atmospheric CHartographY (SCIAMACHY) MicroWave Radiometer (MWR) MEdium Resolution Image Spectrometer Instrument (MERIS) Advanced Synthetic Aperture Radar (ASAR) Doppler Orbitography and Radiopositioning Integrated by Satellite (DORIS) Global Ozone Monitoring by Occultation of Stars (GOMOS) Laser Retroreflector (LRR) Michelson Interferometer for Passive Atmospheric Sounding (MIPAS) Radar Altimeter-2 (RA-2)
ERS-1 & 2	Radar Altimeter (RA) Along Track Scanning Radiometer (ATSR) Global Ozone Monitoring Experiment (GOME) Microwave radiometer (MWR) Synthetic Aperture Radar (SAR) Wind Scatterometer (WS) The Precise Range And Range-Rate Equipment (PRARE)
SMOS	Soil Moisture and Ocean Salinity mission

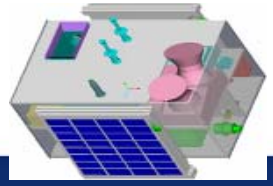
Chinese EO data

Satellite	Instruments
Beijing-1	Multi-Spectral Imager (MSI)
CBRS	CCD Camera (CBERS-01 and CBERS-02) Infrared Multispectral Scanner (IRMSS) (CBERS-01 and CBERS-02) Multispectral Camera (MUX) (CBERS-03 and CBERS-04) Wide Field Imager (WFI) (All CBERS satellites)
FY-3	Earth Radiation Measurement (ERM) Medium Resolution Spectra Imager (MERSI) Microwave Humidity Sounder (MWHS) Total Ozone Unit (TOU) Visible and Infrared Radiometer (VIRR)
HJ-1-A	Hyper-spectrum Imager Wide field multi-spectrum camera
HJ-1-B	Infrared scanner
HJ-1-C	Synthetic aperture radar

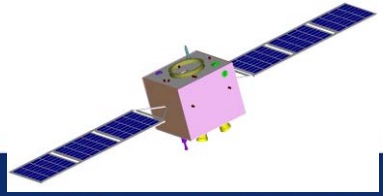
Launched 2 Nov. 2009

CAL / VAL area over China desert area

Optical constellation now in orbit

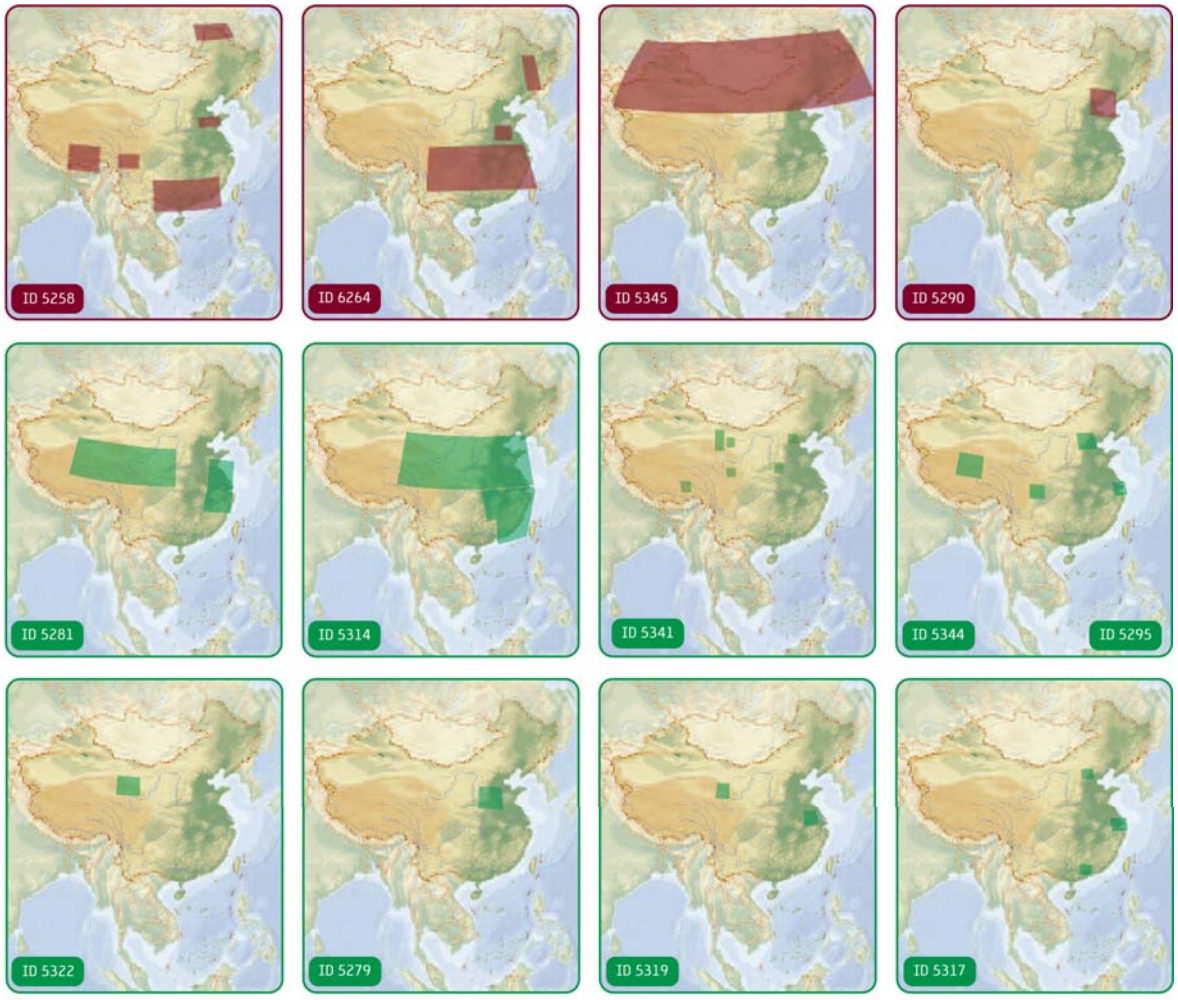


HJ-1-A



HJ-1-B

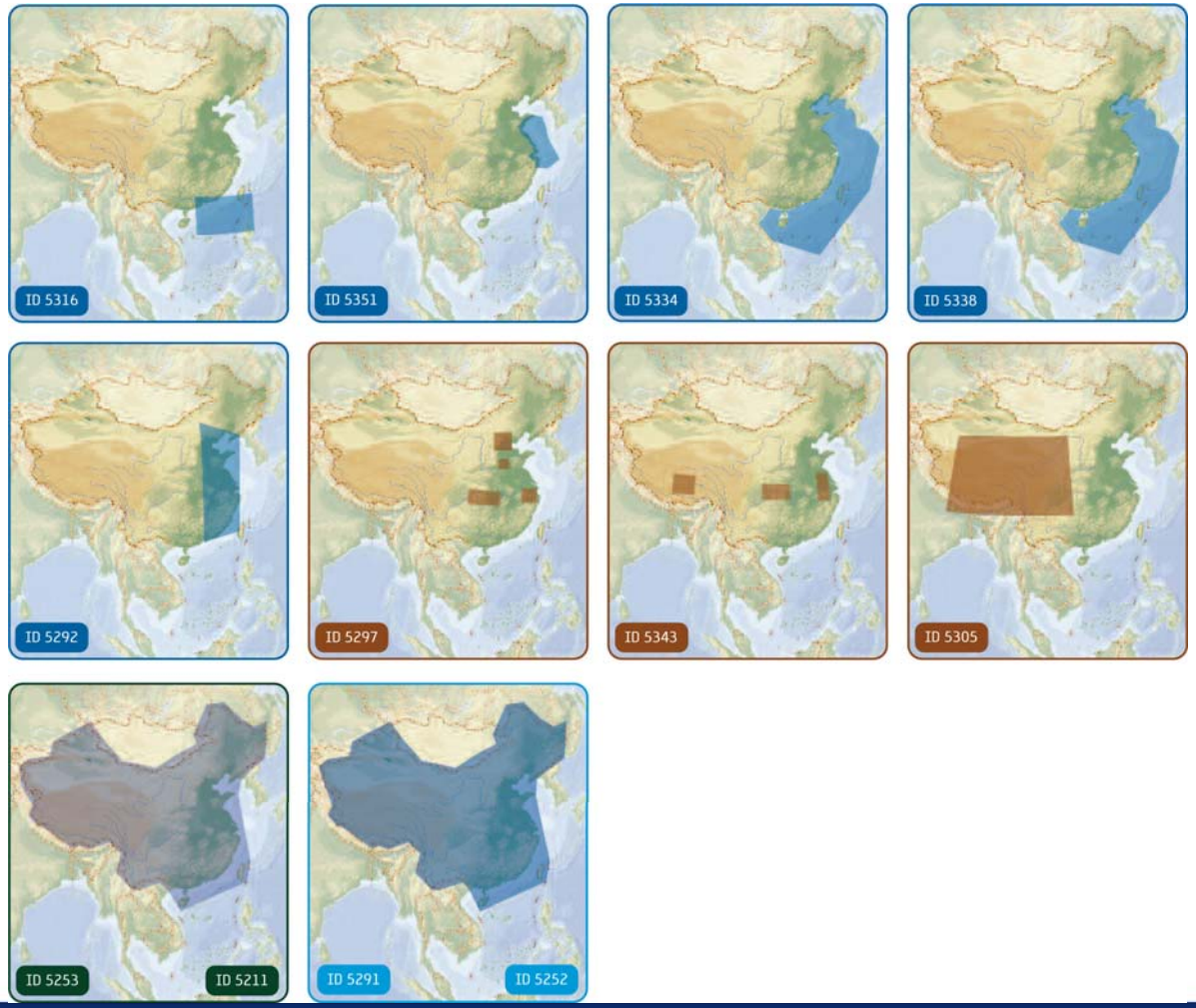
Test Sites by Project



Hazards projects

Land & Environment projects

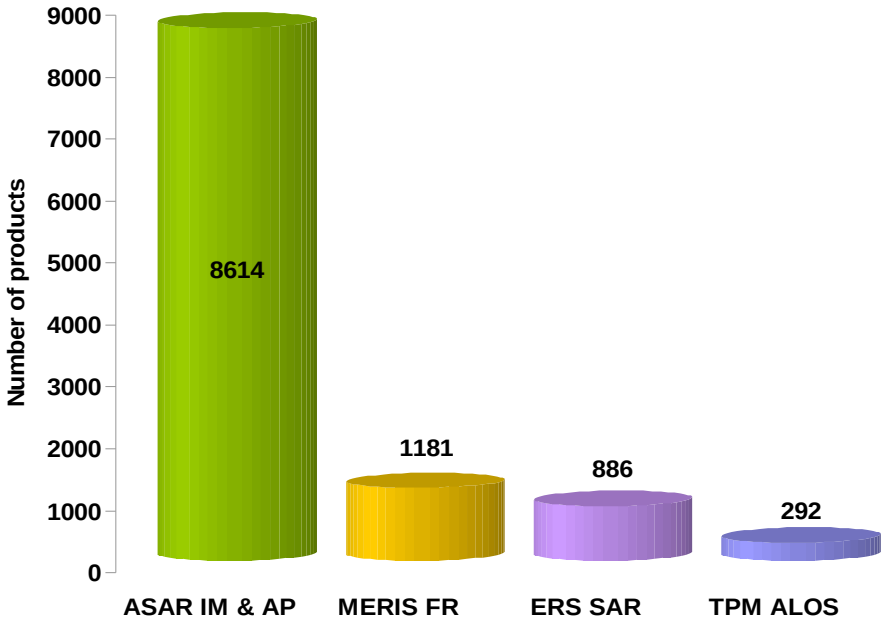
Test Sites by Project



- Oceanography and Coastal Zones projects
- Topographic Mapping projects
- Atmosphere projects
- CAL/VAL projects

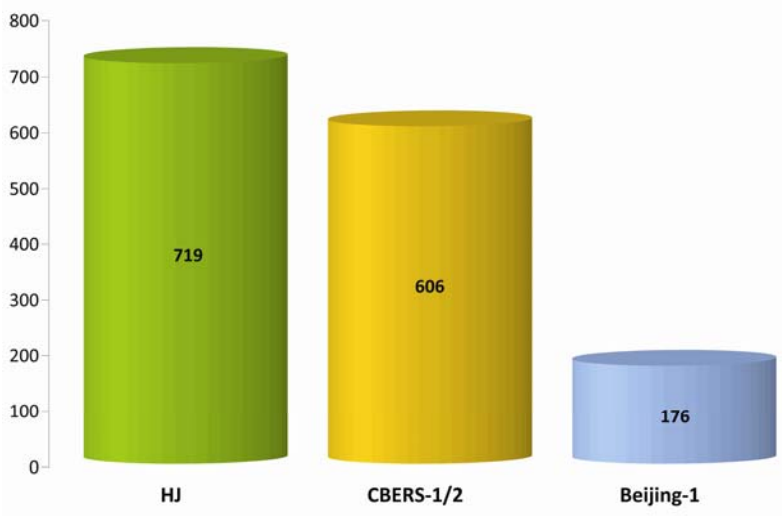
EO Data Delivery – since KO

ESA and TPM HBR Data (June 2011)
Total of 10973 high bit rate scenes



NOTE: LBR data delivered via ftp are not tracked and therefore not counted

Chinese Data (Jan. 11)
Total of 1788 scenes



NOTE: FY data delivered by internet are not tracked and therefore not counted

Dragon 2 Programme

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  - Project thematics
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- **Results and reporting**
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2008 Kick-Off Symposium

Participation by 344 European and Chinese Scientists

2009 Barcelona Symposium

142 participants, ppts on-line at: http://dragon2.esa.int

2010 Mid Term Guilin Symposium

Participation by 252 European and Chinese Scientists

Opening by **Vice Minister MOST** Dr. Cao Jianlin

NRSCC

esa

ESA-MOST Dragon 2 Programme

2011 DRAGON 2 SYMPOSIUM

20-24 June 2011 | Prague | Czech Republic

Symposium Overview
Sessions are as programme

	MONDAY 20 JUNE	TUESDAY 21 JUNE	WEDNESDAY 22 JUNE	THURSDAY 23 JUNE	FRIDAY 24 JUNE
08:30-10:00	REGISTRATION (08:30-09:30) Team meetings	AUDITORIUM OPENING SESSION	Parallel sessions ID. 5341 DROUGHT MON. / ID. 5316 MON. CHINA SEAS / ID. 5295 EO & SPORT EVENTS	Parallel sessions ID. 5290 SEA ICE / ID. 5279 CROP MON	PROJECTS SUMMARIES
10:00-10:30	Coffee break	Coffee break & photo call	Coffee break	Coffee break	Coffee break
10:30-12:00	Team meetings	Parallel sessions ID. 5252 SMOS CAL/VAL / ID. 5351 WATER QUALITY / ID. 5253 AMFIC	Parallel sessions ID. 5314 FOREST ECOSYS. / ID. 5334 DRAGO NESS / ID. 5317 URBAN GROWTH	ID. 5345 COAL FIRES / ID. 5305 SEISMOL.	PROJECTS SUMMARIES (CONT.) CLOSING
12:00-14:00	Lunch	Lunch	Lunch	Lunch	Lunch
14:00-15:30	Team meetings	Parallel sessions ID. 5322 HYDRO-LOGY / ID. 5292 RIVER DELTAS / ID. 5291 LIDAR CALVAL	Parallel sessions ID. 5344 POL-InSAR / ID. 5264 WET-LANDS / ID. 5343 3 GORGES	LOCAL TOUR	
15:30-16:00	Coffee break	Coffee break	Coffee break		
16:00-17:30	Team meetings	Parallel sessions ID. 5281 WATER RES. / ID. 5338 COASTAL ZONES / ID. 5311 EGOMO	Parallel sessions ID. 5319 CROPS IN CO2 BUDGET / ID. 5258 FOREST FIRES / ID. 5297 TERRAIN MEASUREMENT		
		YOUNG SCIENTISTS POSTER SESSION & WELCOME SOCIAL (18:00-20:00)			

“Changes to the Presentations‘ Programme”

Presentation changes will be posted outside the session rooms

- Please check for changes and up-dates on a daily basis

Abstracts in English & Chinese

on the USB key

Programme in .pdf

Opening Session – The Majakovsky Hall

Tuesday, June 21, 2011
08:30 - 10:10 *Chairs: Zhang Guocheng; Maurice Borgeaud*

08:30 Welcome speech by Jan Kolar (CSO)

08:40 Opening remarks by ESA Head of EO Science Application & Future Technologies Dept., Maurice Borgeaud

08:50 Opening remarks by NRSCC Director General, Zhang Guocheng

09:00 ESA EO missions and future programmes, ESA Representative

09:25 Chinese EO missions and future programme, NRSCC Representative

09:50 Up-date on the Dragon 2 Programme, plans for Dragon 3, Yves-Louis Desnos & Li Zengyuan

10.10 – 10.45 COFFEE BREAK & PHOTO CALL – Balcony of The Majakovsky

SMOS CAL/VAL ID. 5252 – The Social Hall

Tuesday, June 21, 2011
10:45 - 12:15 *Chairs: Zhang Weiguo ; Bob Su*

10:45 Progress on SMOS CAL/VAL in China
Zhang, Weiguo [1]; Li, Dihui [1]; Liu, Hao [1]; Xu, Chuandong [1]; Kerr, Yann [2]
[1]Centre for Space Science and Applied Research,Chincademy of Sciences, (CHINA);
[2]CESBIO/CNES,France, (FRANCE)

WATER QUALITY ID. 5351 – The Rais Hall

Tuesday, June 21, 2011
10:45 - 12:15 *Chairs: Zhou Yunxuan*

10:45 Remote Sensing of low Salinity in the outer Changjiang Estuary, East China Sea
Pan, Delu [1]; Bai, Yan [2]; He, Xianqiang [2]; Tao, Bangyi [2]; Lei, Hui [2]
[1]State Key Laboratory of Satellite Ocean Environment Dynamics, Second Institute of Oceanography, State, (CHINA);
[2]State Key Laboratory of Satellite Ocean Environment Dynamics, Second Institute of Oceanography, Stat, (CHINA)

AMFIC ID. 5253 - The Majakovsky Hall

Tuesday, June 21, 2011
10:45 - 12:15 *Chairs: Ronald van der A ; Zhang Peng*

10:45 Air Quality Monitoring and Forecasting In China
Van der A, Ronald ; Mijling, Bas ; Kelder, Hennie
KNMI, (NETHERLANDS)

11:10 Satellite Remote Sensing Atmopsheric Compositions, Products Validation and Data Application in China
Zhang, Peng
National Satellite Meteorological Center, Chinese Meteorological Adminstration, (CHINA)

11:35 Study on Spatiotemporal Variation of Mid-upper Tropospheric Methane over China by Satellite Observations
Zhang, Xingying
National Satellite Meteorological Center, (CHINA)

CLICK

Progress on SMOS CAL/VAL in China

Zhang, Weiguo[1]; Li, Dihui[1]; Liu, Hao[1]; Xu, Chuandong[1]; Kerr, Yann[2]
[1]Centre for Space Science and Applied Research,Chincademy of Sciences, CHINA; [2]CESBIO/CNES,France, FRANCE

SMOS is the second Earth Explorer opportunity mission (ESA led with CNES and CDTI) which was selected in 1999, initiat
launched in 2009. It uses a new technique (2D interferometry) to provide global measurements from space of key variab
moisture and sea surface salinity) for the first time. The average resolution of SMOS is about 43 Km with global coverage
point of the surface can be seen with several angles and maximum time (equator) between two acquisitions is 3 days.
SMOS has suffered from Radio frequency interferences (RFI) severely over Europe-Asia even though it is operated in pass
protected band preserved for astronomy observation (no active transmission from satellite to ground). The consequence i
declines sharply and has no obvious measure to solve it unless RFI sources are mitigated. The paper has given a brief int
RFI situation in China and relative actions that are relevant to this project.
A radiometer for observing L-band Emission from Taklamakan desert (LeTak radiometer) has been constructed. The radio
designed to conduct a ground measurement of brightness temperature in centre of Taklamakan desert in purpose of givin
point for vicarious calibration of SMOS. LeTak is operated with a central frequency of 1.4135GHz, 19MHz bandwidth (3dB
figure while about 15 degree antenna beamwidth. LeTak is in test near Beijing, results are reported in this paper.
CAL/VAL activities should be based on fully understanding of satellite data, reliable measurement instruments and then r
The paper focus on these three aspects, especially progresses that are made in the past year .

SMOS卫星在中国区域定标与真实性检验的进展

张卫国[1] 李涤徽[1] 刘浩[1] 宿传东[1] KerrYann[2]
[1]中国科学院空间科学与应用研究中心; [2]法国空间与生物圈研究中心(CESBIO/CNES)
SMOS是由欧空局和法国宇航局、西班牙太空中心领导的第二颗对地探索计划(欧空局对地观测计划之一)卫星。该卫星计划于1999年通过甄选，
发射。SMOS首次采用新技术(二维干涉孔径辐射计)对关键变量(土壤湿度和海面盐度)从太空提供全球观测。对于地球上给定点其平均分辨率为4
可实现多角度观测，最大重访时间(在赤道)3天。
SMOS卫星自发射后在欧亚大陆受到了严重的来自地面的无线电干扰。由于卫星上的主载荷传感器是二维合成孔径辐射计，仪器本身不发射无线
频段内的微波辐射与散射，因而它本质上是一个高灵敏度的微波接受设备，数据质量受无线电干扰严重下降且唯一有效的办法是设法将辐射干
简要介绍卫星在中国区域受到无线电干扰的情况和与本项目相关的行动。
本项目已研制了一台用于观测塔克拉玛干沙漠L波段微波辐射的微波辐射计LeTak。该仪器的研制目的是为了在塔克拉玛干沙漠的腹地开展地面
提供地面定标的参考点。LeTak的中心工作频率为1.4135GHz，19MHz带宽，3dB噪声系数和15度波束宽度。本文介绍了对该仪器在北京附近开展
最新结果。
卫星地面定标与真实性检验需要基于对卫星数据的透彻理解、可靠的观测仪器以及有理可行的科学计划。本文将在这三方面着重介绍近一年来

Remote Sensing of low Salinity in the outer Changjiang Estuary, East China Sea

Pan, Delu[1]; Bai, Yan[2]; He, Xianqiang[2]; Tao, Bangyi[2]; Lei, Hui[2]
[1]tate Key Laboratory of Satellite Ocean Environment Dynamics, Second Institute of Oceanography,
[2]State Key Laboratory of Satellite Ocean Environment Dynamics, Second Institute of Oceanograph
CHINA

CLICK

The absorption coefficient of color dissolved organic matter (CDOM) was found to be good relative
plume systems, and consequently, the satellite-derived absorption coefficient of CDOM (aCDOM) c
synthetic salinity field of the plume area in many researches. East China Sea (ECS) is influenced b
especially in the summer. The relationships between aCDOM and Sea Surface Salinity (SSS) were
covering four seasons. Since the CDOM mainly came from the terrestrial input carried by the river
was various and affected by the change of river discharge, photobleacing and other complicated p
Meanwhile, CDOM was accumulated during the phytoplankton growth, and the conservative relatio
the blooms and the open ocean where there were less terrestrial CDOM. Stable relationship was fo
small seasonal change, and there were somewhat dispersed in spring and autumn bloom, and the
stable. Remote sensing algorithm of CDOM was developed in this area, and the images of satellite
in 1998 and 2003 had proved that the model was stable and applicable.

长江冲淡水遥感反演研究

潘德炉，白雁，何贤强，陶邦一，雷惠
卫星海洋环境动力学国家重点实验室，国家海洋局第二海洋研究所，杭州，中国
在大多数河口和冲淡水系统中，都发现水体中有色溶解有机物（CDOM，又称黄色物质）吸收系数与盐度呈现良好
反演的黄色物质吸收系数可获得冲淡水影响区域的盐度场。东海海洋环境受长江冲淡水的影响非常大，尤其在夏天
通过长江口及东海9个航次的现场观测数据，分析了黄色物质吸收系数和盐度的关系，并探讨了黄色物质在东海区域
河流输入的陆源有机质，淡水端元CDOM吸收系数的变化较大，主要受河流流量、光降解作用及河口系统复杂过程
浮游植物生长会产生原生的CDOM，使黄色物质与盐度的保守性发生改变，这在藻华或受陆源影响较小的远岸陆架
航次的数据，发现尽管CDOM吸收系数和盐度的关系存在一些季节性变化，但两者的关系在盐度10-30psu区间仍比较
冬季的关系最稳定，夏季次之。利用针对东海区域建立的CDOM遥感反演算法及SeaW iFS卫星资料，反演获得了1998
证明了本文建立的利用CDOM吸收系数反演盐度算法的稳定性和适用性。

ESA & TPM EO data support desk

Raeffale Rigoli is here from 20 to 22 June, please contact him to discuss data ordering issues for the following missions

- Envisat
- ERS-1 & 2
- SMOS
- Cryosat
- PROBA

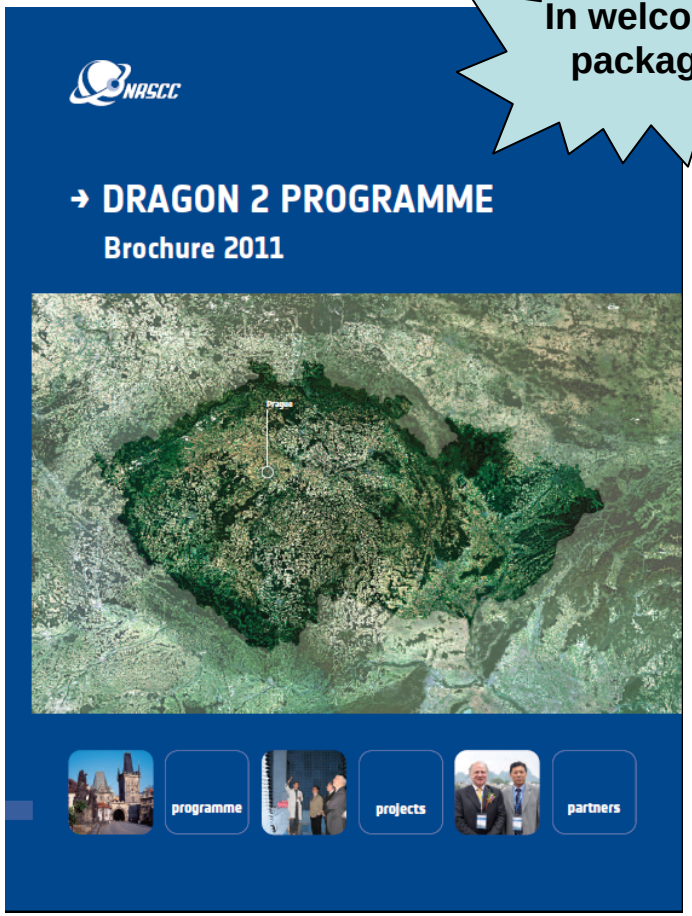
Chinese EO data support desk

Gao Zhihai is here for the week, please contact her to discuss data ordering issues for the following missions

- Beijing-1
- CBERS
- FY-3
- HJ-1-A
- HJ-1-B

2009 & 2011 brochures

Programme, projects' latest results and partners



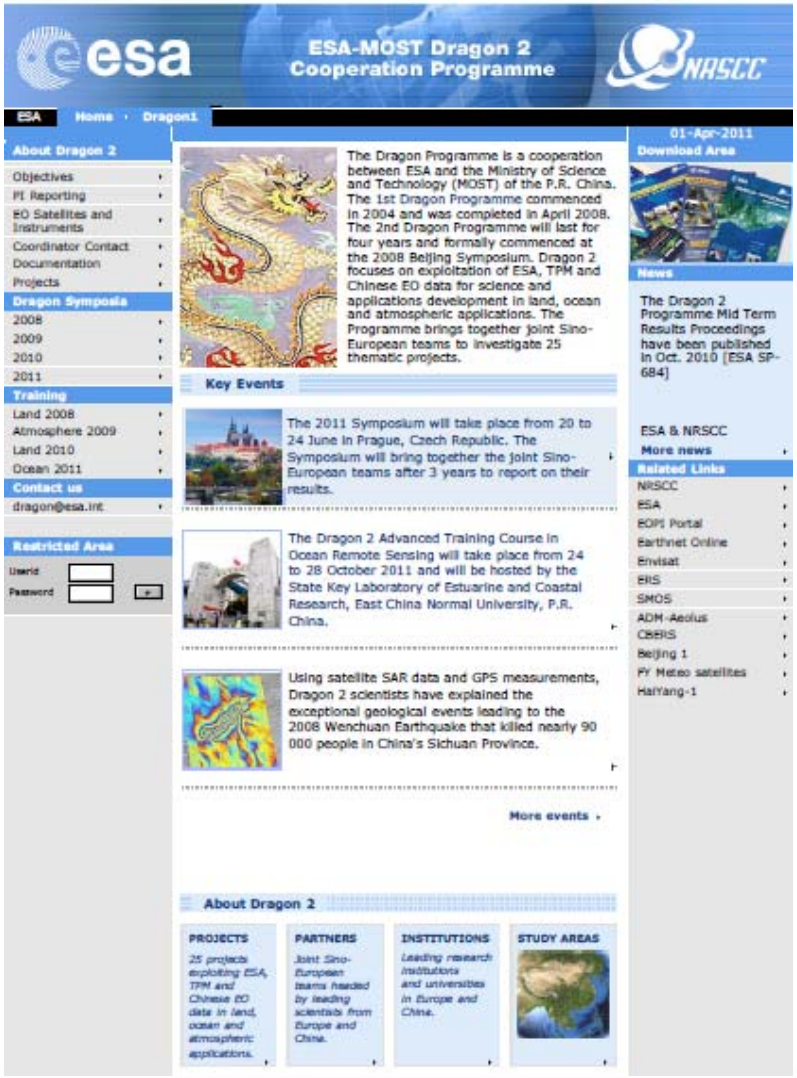
In welcome package

Dragon 2 Web site

http://dragon2.esa.int/

Info. & reporting portal

- News & Events
- Projects, partners & study areas
- Symposia:
  - programmes
  - abstracts
  - presentations
- ESA, TPM & Chinese EO missions
- Access to documentation
  - EO data ordering
  - 2009 & 2011 brochures
- Advanced training courses:
  - registration & programmes
  - lecturers & content
- Mid and final term proceedings



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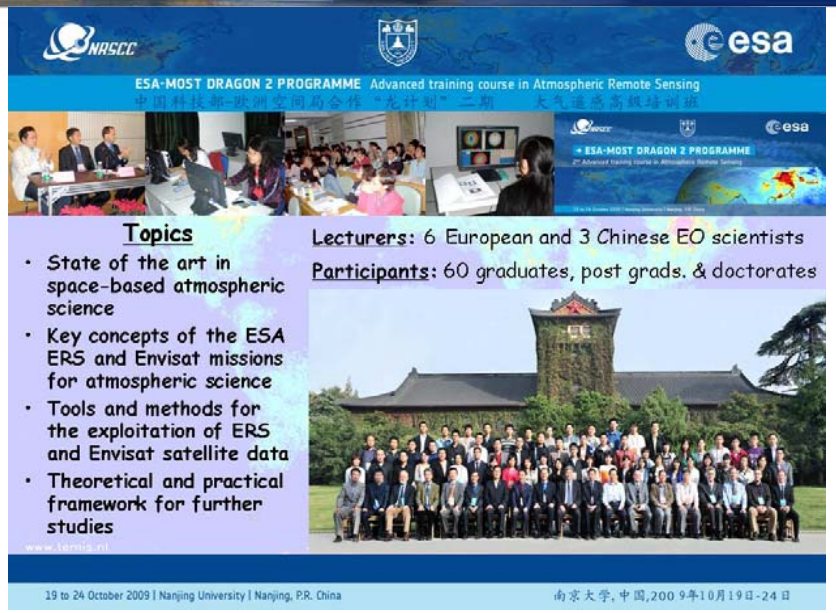
- **Dragon training and academic exchanges**
  - **Advance training courses**
  - **Young scientists & Academic exchanges**
- Dragon 2 results

4 Advanced Training Courses
2 Land, 1 atmosphere & ocean 2011

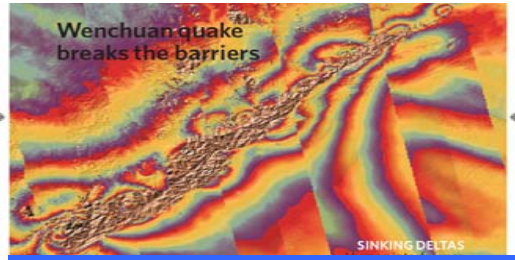


Young Scientists training

- **ESA & NRSCC Programmes**
  - ESA side 21 young scientists gained post graduate qualifications or are doing post graduate research
  - NRSCC side 219 young scientists gained post graduate qualifications or did research, in which 42 gained Doctor Degree and 67 gained Master Degree
  - All young scientists report at the annual Symposia
  - Special poster session dedicated to presentation of their research
  - Awards for best poster papers at the Guilin Symposium
- **International Research Fellows hosted at ESRIN**
  - From June to Dec. 2010 Assoc. Prof. Zhang Lu – multi-frequency PSInSAR and DInSAR, 3 Gorges Dam
  - From July 2010 to Jan. 2011 – Prof. Jingsong Yang, validation of GLOBEWAVE SAR data

Summary & next steps

- Dragon 2 Programme
  - *After 3 years of activity **12000+ HBR** scenes delivered, NRT LBR delivery via ftp*
  - ***Publication of results**:*
    - *Joint mid term proceedings (ESA SP-684)*
    - *2011 brochure (published June)*
    - *Publications in leading scientific journals*
  - *Also sessions at **International Symposia**, e.g. ISRSE-33 & -34, APSAR*
  - *Training of **280 post graduate scientists** in EO exploitation by advanced courses*
- Next steps
  - *Hold the **final results' Symposium** in Beijing in 2012*
  - *Publish the **final results proceedings** as a joint publication in 2012*



➢ Front cover of Nature Geosience

Part 2: Continuity beyond 2012.....

Dragon 3 Programme

Dragon 3 Programme

- **Following success of Dragon 2 programme, ESA and NRSCC propose new 4 year programme collaboration**
  - **Commencing June 2012, ending 2016**
- **ESA & NRSCC EO Programmes**
  - ESA and Chinese proposing new and continuity missions from 2012 on
    - ESA e.g. Sentinels, existing & new Explorers
    - Chinese side e.g. CO_2 mission, Beijing-2, HJ-C SAR
- **Opportunity to form new joint Sino – European teams for science and application development**
- **A new Announcement of Opportunity will be made by ESA and NRSCC**
  - **AO Open 1st October 2011**
  - **AO Closed 1st December 2011**

AO content / themes (1)

Continuity of 25 topics under Dragon 2 covering:

Land and Environment
- Forest Ecosystems
- Urbanisation
- Croplands in CO2 Budget
- Drought Monitoring
- POLINSAR
- Hydrology
- Crop Monitoring
- Water Resources
- Sport Events Case Studies
- SMOS Cal/Val

Atmosphere
- Air Quality Monitoring
- Chemistry Climate Change
- LIDAR Cal/Val

Ocean and coastal zones
- Monitoring China Seas
- DRAGONESS
- Coastal Zones
- River Deltas
- Monitoring Water Quality

Hazards
- Coal Fires
- Wetlands
- Forest Fires
- Sea Ice Detection (ASAR)

Topographic Mapping & Measurement
- Topographic Measurement
- Crustal Deformation
- Monitoring Three Gorges

AO content / themes (2)
Potential additional topics for AO

Theme	Sub-Theme
Atmosphere	➢*Atmospheric Constituents: Geophys. Retrieval* ➢*Clouds, Aerosols, Surface Parameters* ➢*UV Radiation* ➢***Air Pollution**(D2)* ➢***Trend Analysis**(D2), Assimilation* ➢***Chemistry Models**(D2), Radiative transfer*
CAL / VAL	➢***Calibration / Validation EO data**(D2)*
Coastal zones monitoring	➢***Bathymetry mapping**(D2)* ➢***River discharge mapping**(D2)* ➢*Coastal protection and change monitoring (algae blooms, erosion assessment, water pollution...)*
Geodesy	➢*Geodesy*
Geology	➢*Geological mapping* ➢*Geodynamics* ➢*Archaeology*
Hazards	➢*Volcanoes monitoring* ➢***Earthquakes**(D2)* ➢***Earth motion**(D2) (Crust motion, Subsidence)* ➢***Floods**(D2)* ➢*Oil* ➢***Fires**(D2)* ➢***Landslides and Soil erosion**(D2)* ➢*Damage assessment*
Hydrology	➢*Snow melt* ➢***Soil moisture**(D2)* ➢***Wetlands**(D2)* ➢*Run-off* ➢***Water cycle**(D2)*

Theme	Sub-Theme
Ice	➢*Ice sheet mapping* ➢*Ice-sheet dynamics and properties*
Land environment	➢***Environment** (**Urban SAR-climatology**(D2), Global change...)* ➢***Land surface temperature**(D2)* ➢*Desertification*
Methods	➢*Algorithm development, Software development, Product development*
Oceanography	➢***Wind-wave**(D2)* ➢***Primary production**(D2) (Geochemistry, Fisheries, SST...)* ➢***Ocean dynamics**(D2) (Circulation, Sea currents, Sea-level, NRT...)* ➢***Sea features**(D2) (Ship detection, Air-sea features...)*
Renewable resources	➢***Rice and Agriculture**(D2)* ➢*Vegetation* ➢***Forestry**(D2)* ➢***Land cover / use mapping**(D2)*
Sea-ice	➢***Sea-ice**(D2)*
Topographic mapping	➢***DEMs**(D2)*
Climate	➢*Climate & Climate Change*
POLInSAR applications	➢***Methods**(D2)* ➢***Algorithms**(D2)* ➢***Products**(D2)* ➢***Validation**(D2)*

Proposed thematic and sub-thematic applications areas for science and application development under Dragon 3. (n.b. superscript D2 indicates application domain investigated under Dragon 2 (2008 to 2012)

Current & Future ESA-Chinese EO missions

Current ESA EO missions	
Satellite	**Instruments**
ENVISAT	AATSR, SCIAMACHY, MWR, MERIS, ASAR, DORIS, GOMOS, LRR, MIPAS, RA-2
ERS-1 & 2	RA, ATSR, GOME, MWR, SAR, WS, PRARE
Proba	CHRIS, HRC
ESA Explorer missions	
SMOS	MIRAS – Soil Moisture and Ocean Salinity mission
Cryosat-2	SIRAL – ice extent and thickness
GOCE	The Gravity field and steady-state Ocean Circulation Explorer (GOCE)
ADM (2013)	Atmospheric Dynamics Mission (ADM-Aeolus)
Swarm (2012)	Earth's magnetic field & dynamics
EarthCARE (2016)	Clouds & aerosols
ESA future missions (from 2012 to 2020)	
Sentinel-1 A/B (2013/2015)	C-band wide swath interferometric SAR
Sentinel-2 A/B (2013/2016)	Multi spectral imaging land applications
Sentinel-3 A-B (2013/2017)	Wide Swath ocean colour, vegetation, sea land surface temperature, altimetry
Sentinel-4 (2019)	Geostationary atmospheric
Sentinel-5 Precursor (2014)	Atmospheric composition monitoring

Current Chinese EO missions	
Satellite	**Instruments**
Beijing-1	Multi-Spectral Imager (MSI)
CBERS	CCD Camera (Note CBERS-01 and CBERS-02 archive only) Infrared Multispectral Scanner (IRMSS) (CBERS-01 and CBERS-02) Multispectral Camera (MUX) (Note CBERS-03 and CBERS-04 data policy TBC) Wide Field Imager (WFI) (All CBERS satellites)
HY-1 A/B	Chinese Ocean Colour and Temperature Scanner (COCTS) Coastal Zone Imager - CCD Camera (CZI)
FY-3	Earth Radiation Measurement (ERM) Medium Resolution Spectra Imager (MERSI) Microwave Humidity Sounder (MWHS) Total Ozone Unit (TOU) Visible and Infrared Radiometer (VIRR)
HJ-1-A	Hyper-spectrum Imager
	Wide field multi-spectrum camera
HJ-1-B	Infrared scanner
HJ-1-C (2012)	Synthetic aperture radar (Sband SAR launch 2012?)
China future missions (from 2012)	
CO2 (2015)	CO2 mission
CBERS 2C (2012)	New mission
CFOSAT (2014)	F/Cn cooperation (TBC)
HY2 (TBC)	(TBC)
Beijing 2 (2013)	Constellation of 3 satellites access TBD in 2013

*** Green – in preparation, Yellow –in preparation and contribution to Dragon 3 to be confirmed**

Young & Dragon Scientists

- **Young Scientists**
  - – continue support for MSc. Ph.D. and post doc. Level research on per project
- **Annual reporting at Symposia**
  - – Poster sessions
  - – Prizes at mid term and final results Symposium
- **International research fellows at ESRIN**
  - – 6 month fellowships in land, ocean & atmosphere research

Advanced Training Courses

- **Continuity of 6 day training courses in:**
  - Land
  - Atmosphere
  - Ocean
- **New themes**
  - Cryosphere, Climate change
  - Interaction between land / ocean / atmosphere

AO Schedule

AO Approval & acceptance by ESA & MOST	**ESA PBEO : 27 & 28 Sept. 2011** **MOST: Sept. 2011**
Opening of the call for proposals	**1 Oct. 2011**
Deadline for submission of proposals	**1 Dec. 2011**
Proposal evaluations	**By 1st Jan. 2012**
ESA/MOST-NRSCC review meeting	**10 Jan. 2012**
Revision of final list of proposals ready for approval by ESA & MOST	**17 Jan. 2012**
Notification of evaluation to PIs	**Following ESA PBEO Feb. 2012** **Target date 1st Mar. 2012**