RADARSAT-2
IPY Activities

IPY Space Task Group SAR Coordination
Meeting

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30/9/2008 – 1/10 2008

German Aerospace Centre (DLR)
RADARSAT-2 Status

LEOP & Commissioning

- Launch on 14th Dec. ’07 at 13:17:34.448 UTC
- Nominal injection ~ 3km high
- LEOP activities completed to plan on Day 2 of mission
  - Deployments on first shift
  - Normal Point Mode with right-looking slew on third shift
- Payload turn-on and first image on Day 4
- Operational orbit achieved on 24th Jan. ’08 (start of 24-day repeat cycle)
**Commissioning**

- Commissioning Complete Review held April 24\textsuperscript{th}, 2008
  - Initial calibration complete for all beams and modes
  - System demonstrations complete
  - Operational assessments of team and infrastructure ready for operations
  - Review was a SUCCESS

- Routine Operations commenced Friday April 25\textsuperscript{th}, 2008
Capacity and Planning

- Acquisitions / day = Goal 500
- To-date: average of 70 acq. / day

![Graph showing acquisitions completed by month]

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Latency

- Emergency Requests - averaging 16 user-requested emergencies a month
- Timeline goal to receive, plan and uplink an Emergency Acquisition – 6 hours
- Antarctica emergency response during commissioning achieved 4.5 hours from order submission to image processing completion!
- Continue to exceed goals
Throughput

- Maximum scenes per day: Goal 100
  actual 100
- Average daily since April: approx. 70

Image Quality imagery not included in totals
Routine Operations

• Left and right slew plans are set on a regular basis – plan currently extends out to January
• Order Desk interface is operational through the CGD for the placement of orders
• Archive requests bypass the planning systems, meaning data is processed with no planning delays
• Archive files are updated daily – and browse images are available using the APT tool to review archive choices.
• Network station certification processes
  – two stations now certified
  – two in progress
Beam Mode Requests

Distribution of Beam Requests

- Fine
- Fine QP
- High Inc
- MultiLook Fine
- ScanSAR Narrow
- ScanSAR Wide
- Spotlight
- Standard
- Standard QP
- Ultrafine
- Wide

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Calibration Activities

- Imaging Modes were readied for Routine Operations:
  - Initial radiometric calibration is complete
  - Initial polarimetric calibration is complete
  - Geolocational accuracy better than goal
  - Includes all left and right looking baseline beam modes:
    - Single Beams – standard, wide, fine, multi-look fine, ultrafine, standard and fine quad-pol, and extended beams (high and low)
    - SCANSAR Wide and Narrow beams
Image Quality

• All modes meet or exceed pre-launch specifications

• Data sets are available for anyone to download from www.radarsat2.info. It includes a Vancouver data set of all beam modes and Quadpol data from standard research sites of:
RADARSAT-2 Antarctic Mapping Mission

- Requirement – Pole to coast coverage in Fine or Standard Mode. One winter and one summer coverage.
- RADARSAT-2 routine left or right looking provides coverage at extreme southern latitudes
- Constraints
  - Eclipse season
  - Coordinating the slew plan with other mission requirements (switching from left to right looking modes)
  - South of ~90 deg S need higher incidence angle modes (e.g. EH3)
- Actions
  - MDA GSI is currently updating the slew plan to accommodate mapping south of ~78 deg S to complete first RADARSAT-2 coverage for Antarctic winter ’08.
  - Acquisition plan to be developed and implemented with CSA order desk.
RADARSAT-2 Antarctic Mapping Mission Status

Slew Plan updated to accommodate left looking coverage of Antarctica
- Antarctic Winter Coverage – Cycle 12 (Oct 14 – Nov 7, 2008)
- Antarctic Summer Coverage – Cycle 16 (Jan 18 – Feb 11, 2008)

Acquisition plan for Antarctic Winter Coverage prepared for Wide / Extended High Modes

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RADARSAT-2 Antarctic Mapping Mission
Acquisition Plan

- Wide 3 / EH 4 coverage
- 207 Swaths / 2630 scenes
- 8 days to complete coverage
- Maximum imaging time 14 minutes
- Recorded on Solid State Recorder
- Downlink in Gatineau or Prince Albert
RADARSAT-2 Antarctic Mapping Mission
Acquisition Plan

• Standard 5 / EH 4 coverage
• 297 Swaths / 5191 scenes
• 12 days to complete coverage
• Maximum imaging time 14 minutes
• Recorded on Solid State Recorder
• Downlink in Gatineau or Prince Albert
RADARSAT-2 Antarctic Mapping Mission

- Constraints
  - Conflicts – This is background mission so lowest priority
  - SSR / Downlink capacity – current plan is well under maximum SSR capacity
    - Max downlink per swath on this coverage = ~ 6 minutes
  - Access control (operating license)
  - CSA data sharing rights under the master agreement

ScanSAR Wide B Image HH+HV of Amundsen Shelf
RADARSAT-2 Antarctic Mapping Mission

- **Next Steps**
  - Confirm Acquisition Plan
  - CSA order desk submission of plan as part of background mission
  - Data processed from archive
  - MDA / CSA agreement on sharing data and determine list of users
  - Review of Customer Access Profile for all users and approval prior to distribution

ScanSAR Wide B Image HH+HV of Amundsen Shelf