

The 15th Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) Science Team Meeting

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The 15th ASTER Science Team Meeting was held in June 23 - 25,1998, at the Tokyo International Forum in Yurakucho,Tokyo , Japan. There were approximately 90 participants representing the ASTER Science Team, Jet Propulsion Laboratory(JPL) ASTER Science Project, Goddard Space Flight Center(GSFC), Earth Remote Sensing Data Analysis Center (ERSDAC), Japan Resources Observation Systems Organization(JAROS), the ASTER Ground Data System(GDS) Project, the instrument vendors, and the Japanese algorithm development contractors. The three-day meeting was composed of a plenary session on June 24 and several individual Working Group meetings from 23 to 25 of June.

Plenary, Wednesday Afternoon, June 24

H.Tsu (GSJ: Geological Survey of Japan), the ASTER Science Team Leader, welcomed the participants and opened the Plenary Session.

Y.Yamaguchi (Nagoya University) reported on **recent Science Team activities and status**. Main topics are as follows.

- * EOS AM-1 launch is postponed. The new launch date is still TBD.
- * ASTER Instrument functionality and performance were confirmed by the Thermal Vacuum Tests at LMMS in Valley Forge
- * ASTER GDS development is in progress
- * Meetings/Scientific Conferences

J.Cymerman(LMASD) reported on the **EOS AM-1 Spacecraft Status**. He said that

- * Test performance(Thermal Vacuum Test, Functional Test etc.) of Spacecraft will be completed in the early September.
- * Spacecraft Readiness
 - Spacecraft ready for ship preparation in this mid-September.
 - Ship preparation (Approximately 3 weeks)
 - Launch Operations(Approximately 12 weeks)
 - Official Launch date pending GSFC Decisions

M. Kudoh(JAROS) reported on the **ASTER and Spacecraft Status**. The main topics were as follows.

- * Postponement of EOS AM-1 Launch Date
 - NASA announced that the scheduled June,1998 EOS AM-1 launch date was postponed due to problems with EOSDIS FOS(Flight Operation Segment) software anomalies for EOS AM-1 commanding and telemetry until no earlier than early 1999.
 - The postponement of EOS AM-1 launch was reported to the SAC(Space Activities Committee; Japan Space Top Policy Management Organization) by MITI on June 3,1998.
- * Recent S/C major activities(Thermal Vacuum Test: TV Test, Thermal Balance Test:TB Test, S/C Comprehensive Test etc.) from Feb.1 to end of July,1998
- * Effects by launch delay on ASTER
 - ASTER instrument team has been making every effort to keep this June 30 launch, including EOS AM-1 I&T support activities.
 - Though JAROS/ASTER sensor committee specified some marginal requirements for launch delay (one year of so) in the ASTER developmental specifications from the beginning, strict storage conditions should be maintained and specified.
 - For more than 1 year delay,ASTER needs to check detailed items on reliability for each subsystem, especially for the cyrocooler systems.
 - Frequent operations in the clean room are preferable for the ASTER instrument

A.Unger(GSFC) reported on the **Launch and ECS Status**. He said that

- * Development schedule of Flight Operation Segment and Launch date will be decided and announced by GSFC around this middle of July.
- * ECS Flight Operation Segment(FOS)
 - Completion date and EOS AM-1 launch date dependent on stabilizing system and exhaustive testing to discover and correct all remaining problems
- * EOS Data and Operations System(EDOS)
 - Acceptance testing extended to take advantage of available schedule. To complete in late June.
- * ECS Science Information System:
 - Level-1 Production Rule patch released to DAACs on 5/14, as scheduled
 - Supported successful LANDSAT-7 system test (I&T4c.3) at EDC.
 - Completed initial multi-user system stability testing

H. Watanabe (ERSDAC) presented a **current status of ASTER GDS**. He presented the major milestones of US-Japan Meeting during FY 1995 and 1997, and talked about schedule of prelaunch activities, Direct Receiving System(DRS) development , Development for DAR/DPR input by WWW, Development of Billing/Accounting System or Customer Management System started, Interface documents and Engineering/

Formal Test Schedule. He also presented the status of Level-1A&1B generation and DPRs & Auto process of Level-1B generation by GDS

A.Maruyama (ERSDAC) also presented a status of **CMS(Customer Management System)**

Activity / Summary Reports

1.Activity Reports, June 24(Plenary)

Y. Yamaguchi(Nagoya University) reported on a summary of discussions listed below at **SWAMP Meeting** in April, 1998.

- * EOS AM-1 launch is postponed. The new launch date is still TBD.
- * Completed spacecraft integration and thermal vacuum testing
- * Four calibration maneuvers are currently planned
- * Science information Services study team report
- * EOS AM-1 outreach activities plan was presented.

Y.Yamaguchi summarized the **OMPWG ad-hoc meeting** that was held in April 8 to 10,1998 at ERSDAC in Tokyo. The main topics of the meeting included:

- * A joint pre-launch mission preparation plan
 - Mission guideline document near completion
 - Mission procedure document is being generated
- * IST development status and schedule update
- * Scheduler development update
 - Mode transitions : Should be consistent with OICD
- * ASTER Mission Simulator (AMS) development update
- * Mission Analysis Tool (MAT) development status
- * xAR development plan
 - Launch slip impacts to the ICO STARS and the other xARs
 - Status and schedule of post-ICO STARS collection were reported
- * SSSG(Science Scheduling Support Group) technical meeting

M. Pniel reported on the action items of the OMP WG ad-hoc meeting.

T. Kawakami reported on the **11th GDS/EOSDIS I/F meeting meeting** that was held in June 8 to 11,1998 at EDC DAAC in Sioux Falls. The summary of the meeting is as follows.

- * Plan for ASTER science operations for ASTER Level-1 processing during ICO(Initial Check-Out) Period
- * Discussions
 - Japan and US science teams jointly defined the data acquisition requirements for the ICO period,which include approximately 210 target sites.
 - Data acquisition between L+1 and L+40 will be done based on requests

collected by Instrument Team, JAROS, and between L+41 and L+105 by Science Team.

- Comparison between GDS products and Science Products: Science team is responsible for data validation.

Y. Yamaguchi reported on the **STAR Committee** held on June 23. The summary of this meeting is as follows.

STAR is one type of ASTER data acquisition requests and will be submitted from the ASTER Science Working Groups. The role of this committee is to review, coordinate, and approve STAR proposals. The draft STAR guideline document was prepared by H. Sekine, and was reviewed by the committee members. This document defines STAR types, proposal guidelines, parameters, and so on. It was decided that for each STAR proposal, up to 400,000 km² (if the area needs to be covered 4 times, this number becomes 100,000 km²) would have high priority, and the rest would be low priority. Local STARS are limited to only a few specified purposes such as instrument calibration and emergency observations, and will be 1-2 scenes with very high priority. The ICO STARS were essentially finalized with a few minor changes. Concerning the at-launch post-ICO STARS, the STAR proposals and parameters will be reviewed and revised by STAR submitters in order to meet the new criteria by September 1998. New post-ICO STAR proposals can be submitted anytime.

H. Sekine (Mitsubishi Research Institute) presented on **xAR(STAR) collection status**. The main topics of the status included:

- * Status of Japan
 - Japanese ICO STAR parameter files were almost collected from each WG (121 STAR Target)
 - 30 post-STAR proposals with 2504 STARS were accepted by STAR Committee
 - All ICO & post-ICO STAR have been sent back to each WG to review the target & parameters (Due date is the end of July)
- * Launch slip impact
 - STAR Target
 - STAR Parameters
- * STAR Collection Schedule(Japan)
 - Collect revised ICO & Post-ICO STAR parameter files from each WG by the end of July, 1998.
 - Collect revised ICO & Post-ICO STAR proposal by the end of July, 1998
 - Evaluate/ Approve new STAR proposals by September, 1998(TBD)

B. Molloy (JPL) presented on STAR Collection status of US.

- * All approval ICO STARS transferred to H.Sekine as of June 18,1998
 - 166 STARS consistent with summer Northern Hemisphere ICO phase
- * ICO STAR list “tweak” expected as result of STAR Committee analysis

I. Sato(Chair of Higher Level Data Product WG,GSJ) reported on the status of **ASTER User’s Guide**. Topics were as follows.

- * Progress after the last Science Team Meeting
 - Update HTML version documents
 - Make the updated version available at the ASTER Science Server(ERSDAC)
- * Current work and future plan
 - Prepare to release PDF version
- * Schedule
 - Parts of General and Level-1 data product of this Guide will be prepared by the end of next March,1999.

K. Arai (Saga University) & K. Thome(JPL) reported on the results of **the field campaign** in Tsukuba, December 1997, and in Nevada, June 1998.

Issues for Discussions

Y. Yamaguchi asked each working group to discuss on the following issues:

- * Launch Slip Effect
 - Each WG is requested to discuss about the launch slip effect
 - Parameter change of the already submitted STARS: due the end of July,1998
- * Algorithm Validation Plan in both ICO and after ICO phases
 - Let us take advantage of the launch slip to consolidate the validation plans
- * STAR Collection
 - STAR guideline is being prepared by OMP WG by Sep.,1998
- * Outreach Plan
 - ASTER AO has been issued from the Japanese side
 - ASTER websites in US and Japan have been opened
 - What do we need to do in addition to these ?
- * Research Activities
 - We look forward to obtaining the real ASTER data.

The next ASTER Science Team meeting will be held January,1999, at Pasadena, California, U.S.A.

2. Summary Report of each Working Group

Ecosystems Working Group meeting, Chairs H.Kayanne(University of Tokyo) and T.Schmugge(USDA Hydrology Lab), had a two hour meeting on Tuesday June 23, 1998 in Tokyo Japan. The agenda for the meeting was brief with only 3 presentations.

* H. Kayanne started with a brief presentation on the status of the special product algorithms being developed by the Japanese team: wetland, agricultural land, aridland, coral reefs and forest. At present, most of the test sites are situated in Japan. Japan Ecosystems WG intends to expand monitoring sites by ASTER over the globe with many targets in Asia.

* T.Schmugge gave a presentation describing the TIMS data acquired during the summer of 1997 over the Southern Great Plains experiment (SGP-97) site in Oklahoma and the JORNEX experiment site in New Mexico. The TIMS data acquired are of good quality should be adequate for the use of these data for estimating surface fluxes. The spatial scales of a portion of the data acquired over the SGP97 site were studied using wavelet techniques with interesting results. A ground based TIR radiometer recently acquired by the Hydrology lab with ASTER TIR bands was described. An approach for using remotely sensed surface temperatures to estimate surface fluxes was presented. Dr. Ramsey of Arizona State University described the planned use of ASTER data at the Phoenix urban LTER site.

* These presentations were followed by a discussion of the proposed STAR sites from this working group. It was concluded that more collaboration between H.Kayanne and T.Schmugge was needed.

Geology Working Group meeting, Chairs M.Urai and L.Rowan(USGS), was held on June 23. We discussed about Higher Level Products and STAR status. S. Hook(JPL) reported MASTER status and B.Raup (USGS) reported GRIMS progress. We found some redundancies in Volcano STAR. New Action item was assigned to D. Pieri(JPL) and M. Urai(GSJ) to eliminate the redundancies from Volcano STAR.

Temperature-Emissivity Separation (TES) Working Group meeting, Chair S.Rokugawa was held on June 23. Both Japanese and US TES code status were reported, and the TES code update scenario was then discussed for the initial checkout phase. The results of field campaigns in Tsukuba '97 and in Railroad Valley '98 were also reported by the participants. Finally the current status and future flight plan of MASTER(MODIS and ASTER simulator) were presented.

Level-1/Geometric Working Group meeting, Chairs H.Fujisada (Science University of Tokyo) and G.Geller(JPL), was held on June 24. The summary of this meeting was as follows.

- * Level-1 related operation overview during initial checkout period
- * Level-1 algorithm update

- *Japan's geometric validation plan update
- * US geometric validation plan update
- * Development status of geometric validation tools

OMP WG(Operation and Mission Planing Working Group) ,Chairs

Y.Yamaguchi(Nagoya University) and M.Pniel(JPL), met on June 25. The summary of this meeting was as follows.

T. Kawakami(ERSDAC) showed the ASTER AO status update. AO is open to anyone at <http://astweb.ersdac.or.jp/ao/>. H. Sekine(Mitsubishi Research Institute) and A. Molloy(JPL) discussed about xAR collection status and transfer strategy to ASTER Ground Data System (GDS). Updates of the operation and mission planning tool development were reported; ASTER Instrument Support Terminal (IST) by T. Narita(Japex Geoscience Institute: JGI), the scheduler by T. Ohno(JGI), ASTER Mission Simulator (AMS) by R. Cohen(JPL), and Mission Analysis Tool (MAT) by H. Muraoka(Dowa Engineering). A. Molloy reported the discussion results by the Science Scheduling Support Group (SSSG) on the previous day. The issues include the new schedule of Operation Procedure Document (OPD) development, software fix for the scheduler, user category format for AMS input, and so on. N. Doi(ERSDAC) presented about the SSSG training plan. D. Wenkert (JPL)updated the status of Mission Guidelines for ASTER Operations.

Atmospheric Correction Working Group meeting,Chairs T.Takashima(EORC) and F.Palluconi(JPL) , was held on June 25. The topics were as follows.

- * Present status of IR algorithm
 - The algorithm has delivered on April,1998
- * Present status of VIS algorithm(US & Japan)
 - Junge-based look-up table is completed, and is comparable for MISR's (US).
 - Adjacency effect algorithm (Ver.1) is almost ready (perhaps end of August,1998) (Japan)
- * Field campaign at Tsukuba & Railroad Valley
- * Cloud masking
- * Polar cloud masking & contrails at least 130 validation sites in the world are required demonstrated by AVHRR(R.Welch, University of Alabama)
- * Others
 - Our paper has published on IEEE Transactions on Geosciences and Remote Sensing (K.Thome,Arizona University)
Atmospheric Correction of ASTER, IEEE TGRS 36, No.4,
pp.1199-1211,1998

Radiometric Calibration Working Group (CAL WG) meeting, Chair K.Arai(Saga University), was held on June 25. The summary of the meeting was as follows.

One of major concern for us is radiometric calibration coefficient determination method with three types of different sources, onboard calibration lamps and blackbody, vicarious calibration and cross calibration. K. Arai proposed his algorithm as a current baseline for that. Although we could not reach conclusion, a careful trend analysis for the aforementioned three different sources during the initial checkout period as well as the prelaunch calibration phase is highly recommended.

The vendors for VNIR and SWIR presented the test results acquired at Valley Forge during the T/V test, in particular, onboard calibration lamps.

There will be an additional test with an external lamp for SWIR.

A careful analysis will be made for calibration output for VNIR.

K. Thome briefly reported the activities at the previous field campaign in Railroad Playa, Nevada in June 1998. We made a successful observation with LANDSAT, SPOT, SeaWiFS and NOAA as well as Aircraft based MODIS/ASTER Simulator, MAS flights. Also, we discussed the next field campaign plan at Pasadena area in Jan.1999 in conjunction with the next ASTER Science Team Meeting.