



NASA Satellite Laser Ranging Network: Current Status & Future Plans

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Code 453**

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NASA SLR Reductions (Feb. 2004)



- **Reduced SLR Network Infrastructure**
- **Removed NASA provided operator/trainer in Tahiti**
- **Reduced MOBLAS-7 (Greenbelt), MLRS (Texas), HOLLAS (Hawaii) sites to single shift operations**
- **Reduced MOBLAS-4 (Monument Peak) site to 3 shift operations (5 days per week)**
- **Closed TLRS-3 (Arequipa) site in February 2004**
- **Closure of HOLLAS (Hawaii) site in June 2004**



TLRS-3 (Arequipa, Peru)



- **Collaboration with Universidad Nacional de San Agustín (UNSA)**
- **Re-opened TLRS-3 site in December 2005**
- **Upgrade optics, star calibration camera, MCP, recalibrated CFD**
- **Repairs to the laser, controller computer, HP5370, gimbal, dome controller, telescope**
- **First light September 23, 2006**
 - 90 pass segments as of 10/16/06
 - < 10mm RMS data on Lageos
 - ~5.4mm Calibration RMS Values
- **Two shift operations (day & night, 5 days)**



TLRS-3 (Arequipa)





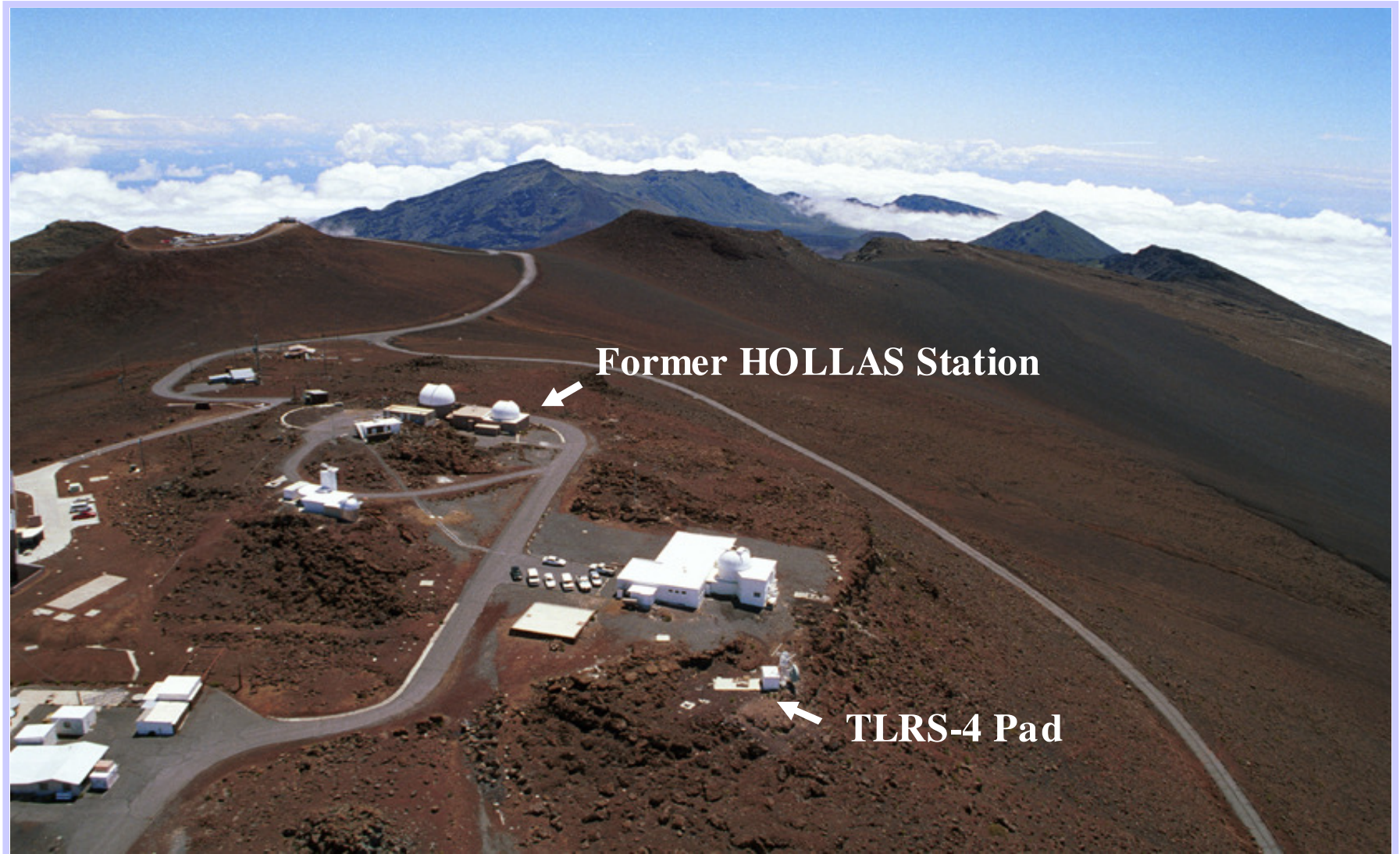
TLRS-4 (Maui, Hawaii)



- **Collaboration with University of Hawaii, Institute for Astronomy (IfA)**
- **Completed TLRS-4 Operational Readiness Review in September 2005**
 - TLRS-4 system had been 10 years of non-operations
 - Shipped to Maui in April 2006
- **Re-opened Hawaii site using TLRS-4 in July 2006**
- **First light October 2006**
- **Two shift Operations (day & night, 7 days)**



Mount Haleakala, Maui Summit





TLRS-4 in front of Mees Observatory





TLRS-4 (Hawaii) Summit View





MOBLAS-4 (Monument Peak, CA)



- **Collaboration with Honeywell Technology Solutions Incorporated (HTSI)**
- **Newly installed Geosciences equipment**
 - DORIS
 - Newly installed DORIS antenna
 - EarthScope
 - Newly installed seismometer
 - Newly High Performance Wireless Research and Education Network (HPWREN) for high speed internet access
- **Three shift operations (5 days, 24 hours per day)**



MOBLAS-4 (Monument Peak, CA)



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MOBLAS-5 (Australia)



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- **Collaboration with Geoscience Australia (GA)**
 - **Continues to be a major data contributor of the ILRS**
 - **Seven day per week operations (24 hours per day)**



MOBLAS-5



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MOBLAS-6 (South Africa)



- **Collaboration with South African National Research Foundation & Hartebeesthoek Radio Astronomical Observatory (HRAO)**
- **Collocated with VLBI, GPS, DORIS**
- **Three shift operations (5 Days per week)**



MOBLAS-6 (HRAO site)





MOBLAS-6 (South Africa)



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MOBLAS-8 (Tahiti)



- **Collaboration with CNES & the University of French Polynesia (UFP)**
- **Dr. Jean Pierre Barriot, new Director of the Tahiti Geodetic Observatory**
- **Two shift operations (5 Days per week)**



MOBLAS-8 (Tahiti)





MLRS (Fort Davis, Texas)



- **Collaboration with University of Texas & the Center for Space Research (CSR)**
- **Continued Lunar and Satellite Laser Ranging operations**
- **Seven day operations (12 hours per day)**



MLRS (Fort Davis, Texas)





NASA SLR Near-Term Actions



- **Increase SLR Network infrastructure**
- **Increase operations at MOBLAS-7 (Greenbelt)**
- **TLRS-3 (Arequipa) site fully operational in December 2006**
- **TLRS-4 (Hawaii) site fully operational in December 2006**
- **Complete SLR2000 Prototype Development**