19th Celebrating 50 Years of SLR
Remembering the Past and Planning for the Future
International Workshop on Laser Ranging
Annapolis, MD October 27-31, 2014

Session 05 and 06:
Science Posters-*3112*
Annapolis Maryland, USA
October 27-31, 2014.

Introduction on ILRS SHAO Analysis Center and Products

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Abstract

SHAO (ShangHai Astronomical Observatory) SLR Analysis Center of The International Laser Ranging Service (ILRS) has established an internet website for SLR products. It published ILRS SHAO ACC and AC products. The ILRS SHAO ACC products include its quick-look processing results such as range and time biases and also the measure errors based on different satellites. The present processed satellites include Lageos-1/2, Etalon-1/2 and LARES. If there is any necessary for other satellites we can also process their SLR data. The ILRS SHAO ACC products also include the residual status and orbit products. ILRS SHAO AC products included SLR SINEX solutions and geocentric motion products. We will not only provide SLR combined solution based on different ILRS AC solutions and also compare our combined solution with ILRS combined solutions.

1 Motivation

SLR is one of Space geodesy techniques and basis for The Terrestrial Reference Frame(TRF) and EOP. It can also provide the orbits of satellites and geocentric motion with cm order accuracy. The International Laser Ranging Service (ILRS) provides global satellite and lunar laser ranging data and their related products to support geodetic and geophysical research activities as well as IERS products important to the maintenance of an accurate International Terrestrial Reference Frame (ITRF). We are also ILRS AAC. Therefore, we hope we can do more contribution to ILRS. So, a system ILRS ACC products has been publishing by SHAO CERS website. A systematic required ILRS AC products will be published including loosely weekly SINEX solutions, geocentric motion, EOP, SLR site coordinate and velocity. In future we will study combining different ILRS ACC and AC solutions and provide their comparison status for SLR users.

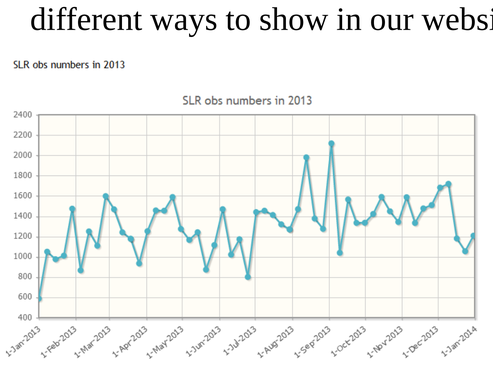
2 Methods

We adopted SHODE-I and COMPASS software packages developed by SHAO SLR data analysis group. We have modified some models according to IERS 2010 Conventions and still need such modification to improve products. In future we will develop the combination software based on different ILRS ACC and AC solutions.

3 Results

In our ILRS AAC products part, firstly we publish the sum of SLR observation and orbit determination rms for different satellites. See figure1. And then publish Comparison of Range and time Biases from Different Analysis Centers(see figure 2). Finally we provide products directory for orbits and biases report for downloading.

In our SLR AC products part, we compare our results with ITRF2008 and IERS C04. Figure 3 shows the statistics of the SLR position and velocity differences of our solutions with respect to ITRF2008 and EOP results w.r.t IERS C04**.** We also show Geocentric motion results (see figure 4) and provide products directory of weekly SINEX solutions for downloading. Figure 5 shows our website. Those products have been constructed in different ways to show in our website step by step.



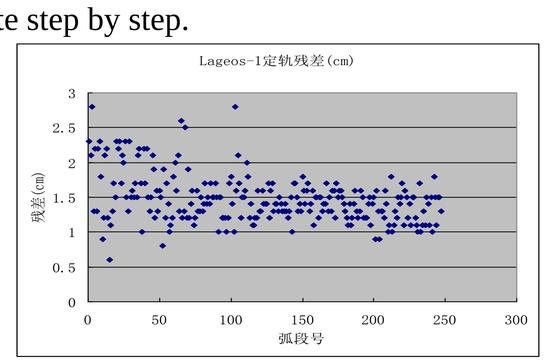


Figure 1. Sum of SLR observation and orbit determination rms (Lageos-1)

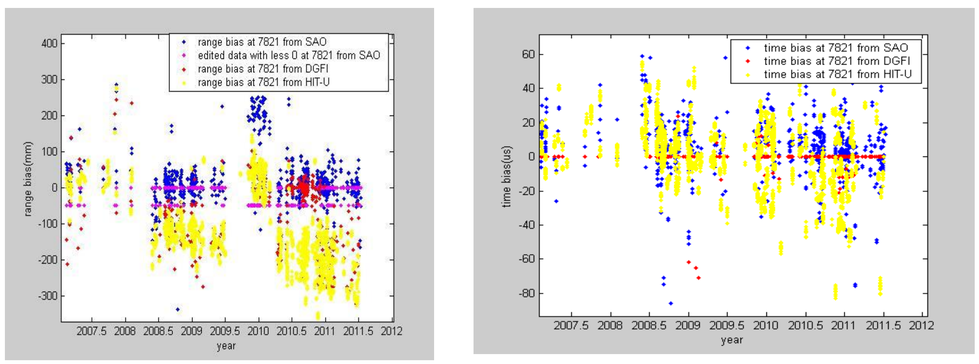


Figure 2. Comparison of Range and time Biases from Different Analysis Centers

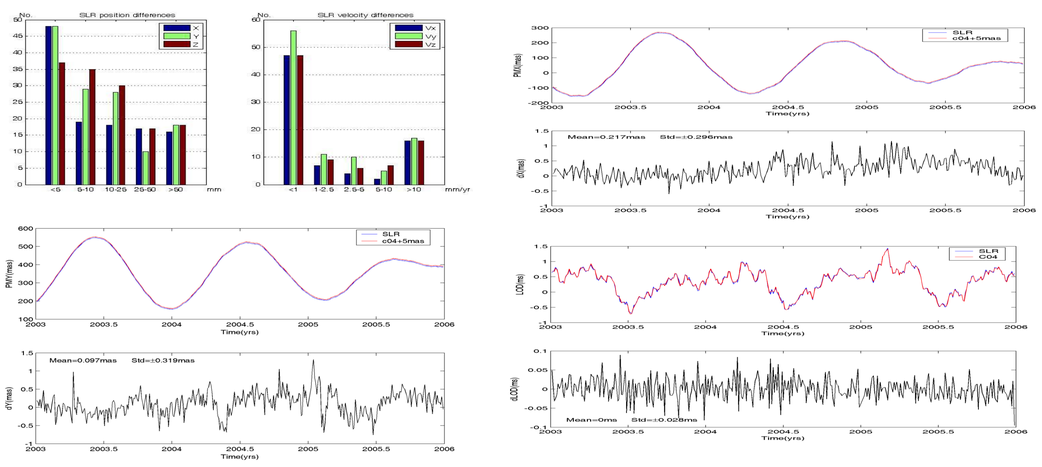


Figure 3. Statistic of the position and velocity differences with respect to ITRF2008 (**up** left) and EOP results w.r.t IERS C04 for Px (Up right), Py (**down** left), LOD (**down** right))**.**

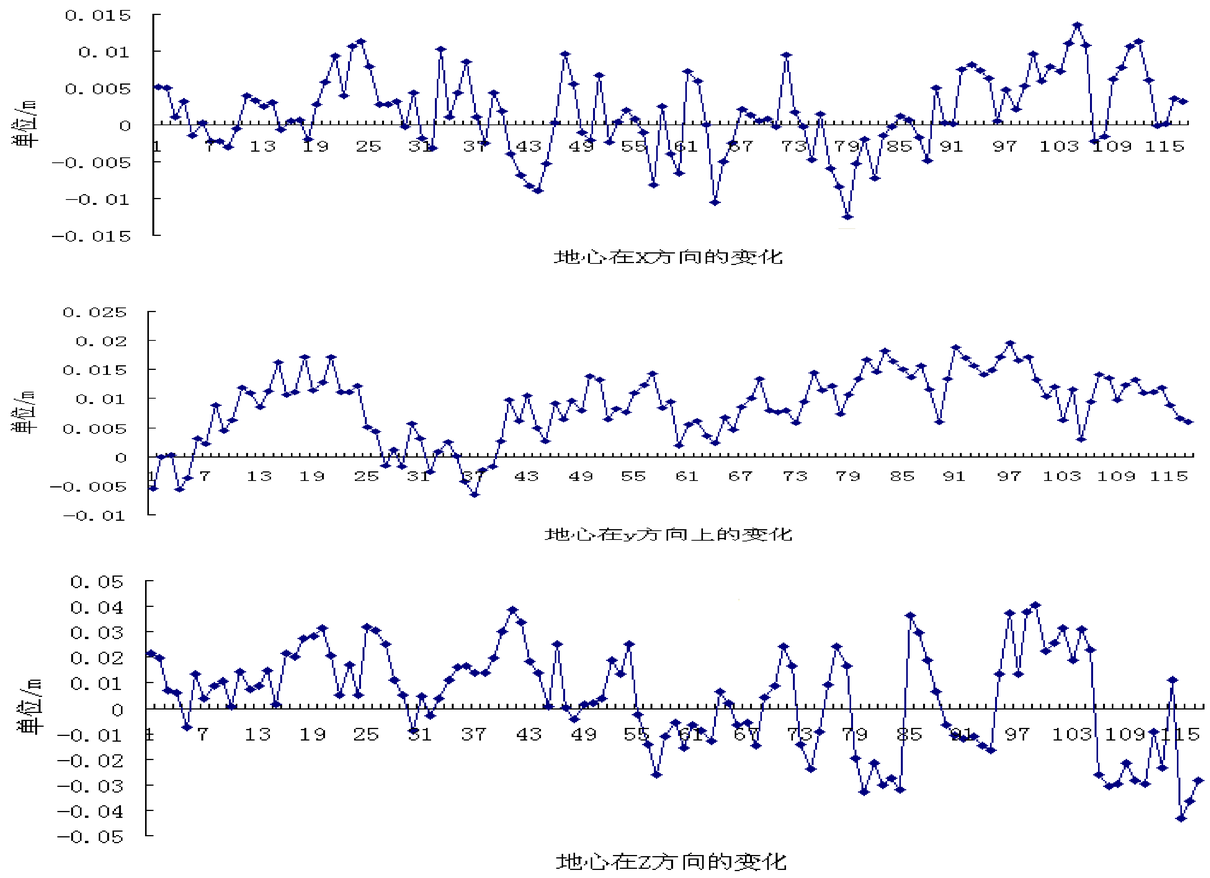


Figure 4. Geocentric motion time series.

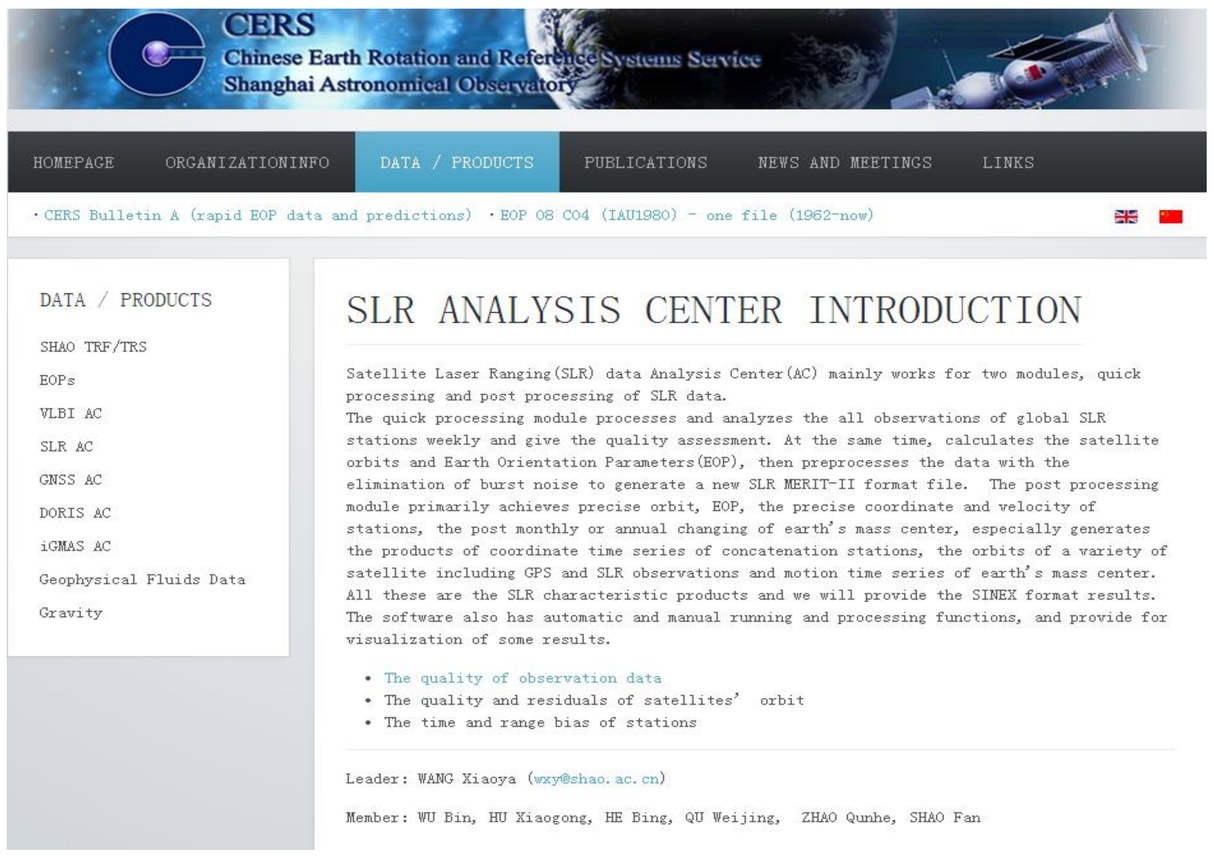


Figure 5. SLR Analysis Center website: http://cers.shao.ac.cn/en/data-products/slrcentre-en.html **.**

Welcome to send us your opinions and suggestions.

4 Conclusion and future plans

SHAO SLR AC has provided some ILRS ACC products such as orbit, orbit determination rms, statistic of observation data and range and time biases by SHAO CERS website. In SLR AC products area we can provide weekly loosely SLR SINEX EOP and coordinate solutions. Meanwhile, we also publish our combined SLR site coordinate and velocity and their comparison with ITRF products. And also publish EOPs and their comparison with IERS C04. Finally we will also publish geocentric motion time series in AC products area. We will provide SLR combined solution based on different ILRS AC solutions and their comparison status in future.

5 Acknowledgments

•This work is funded by the National Natural Science Foundation of China(NSFC) No. 11173048 and Ministry of Science and Technology of China No. 2015FY310200. We also thank ILRS for provide SLR data and support our work.

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