

## SCIENCE IPT

### Testing in Chile

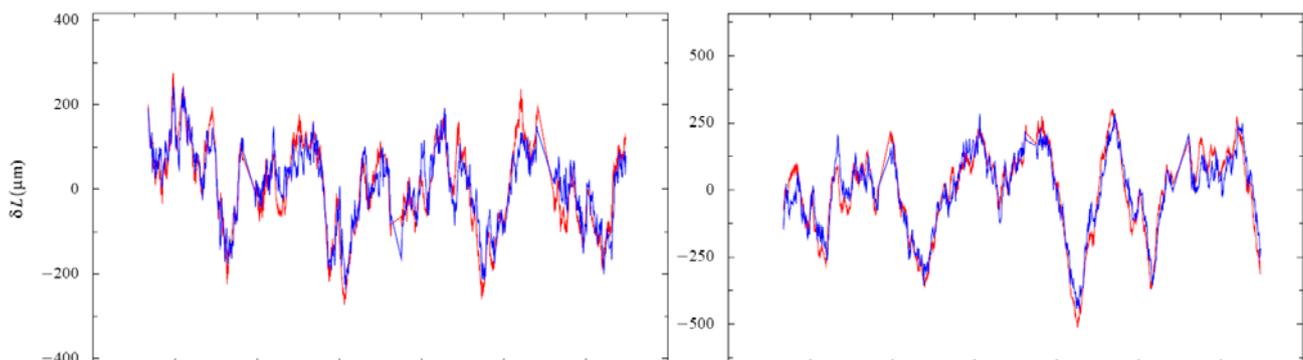
During the first two weeks of January we undertook a series of tests to give us an overall picture of the state of the three-element interferometer operating at the AOS. Although these tests and the work undertaken previously did identify a substantial number of “issues” the majority of which are not solved, it was agreed at a review held on 14<sup>th</sup> Jan that the system was in good enough state for us to make a formal start on Commissioning and Science Verification. The handover from AIV to CSV actually took place on 22<sup>nd</sup> Jan.

We are at present working on an initial set of 17 tasks, of which some are tests of particular sub-systems – antennas, receivers, back-end and so forth – at a more intensive level than was undertaken during AIV, and some are tests of the system as a whole, such as the trials of the basic observing modes. A small team is assigned to each task and the responsibilities for writing reports and providing expertise have been assigned.

We were at long last able to move into the proper control room at the OSF. This is definitely a great improvement over the corridor, but unfortunately the air conditioning cannot be used at present because it is too noisy, so it can be rather hot work!



One aspect that is progressing quite well is the initial testing of phase correction using the Water Vapour Radiometers. Here is a run on two baselines of about 20 minutes of data – interferometer phase in red, estimated correction from the WVR's in blue. Clearly there is a very tight correlation, which means that the correction will work well under these conditions.



Some of the hardware problems that had been identified earlier are on the way to solution – for example it appears that the cause of the 8-nsec delay changes in the digital transmission system has been found, although it will probably not be possible to make the changes to the firmware needed to solve it until mid-April. A plausible hypothesis to explain the “two-times Azimuth” errors seen in the pointing of DV01 since it moved to the high site has also been found. Most of our time is however taken up by software problems. Many issues were solved as a result of long sessions at the site by members of the Computing IPT. We are nevertheless quite restricted in what we can do at present by a combination of known faults or unexpected behaviour in a number of areas. Of particular concern at the moment are the correlator software and the archive and the interactions between them.

Looking ahead, the biggest concern remains the delays in deliveries of equipment and infrastructure. In the short term we need to move the antennas to the ACA stations where we will have the short baselines which are needed for quantitative tests of phase stability and for holographic measurement of the antenna surfaces using astronomical sources. We had expected that the antenna stations would be ready with power and communications by 1<sup>st</sup> Feb but this has slipped by several weeks. After that the limiting factor is likely to be the delivery of the next few Front Ends and Calibration Devices. The present forecasts indicate that these will come considerably later than is necessary if we are to meet our next important milestone of obtaining synthesis images with six antennas by June 2010. We are very much hoping that it will be possible to accelerate these deliveries.

### ASAC

The draft document on the Proposal Review Process was sent to the ASAC and some preliminary discussion e-mail discussions have already taken place. A report will follow the face to face meeting which takes place in Tokyo on 9<sup>th</sup> and 10<sup>th</sup> March.

### Other

Several team members attended the important meeting on software planning and scheduling in Socorro. The lead developer and sub-system scientist for the Observing Tool visited Chile and we are continuing to test this key component and provide feedback to them. A great deal of effort has been going into the investigation of possible ways of reducing the cost of operations.

### Staffing

New members joining the Commissioning Science team in January were Daniel Fullà, Lance Simms and Eric Villard. Al Wootten, who must be the longest-serving member of the ALMA science team by some margin, also joined us here in Chile. He will be here for much of this year. Three strong candidates for the two remaining Commissioning posts were interviewed.

### Outreach

The presentations at the AAS meeting appeared to go well and the accompanying press release attracted some attention here in Chile. ALMA was also represented at the NA URSI meeting in Boulder. Preparations are underway for various workshops and national and regional meetings featuring ALMA that will be taking place in the coming months.