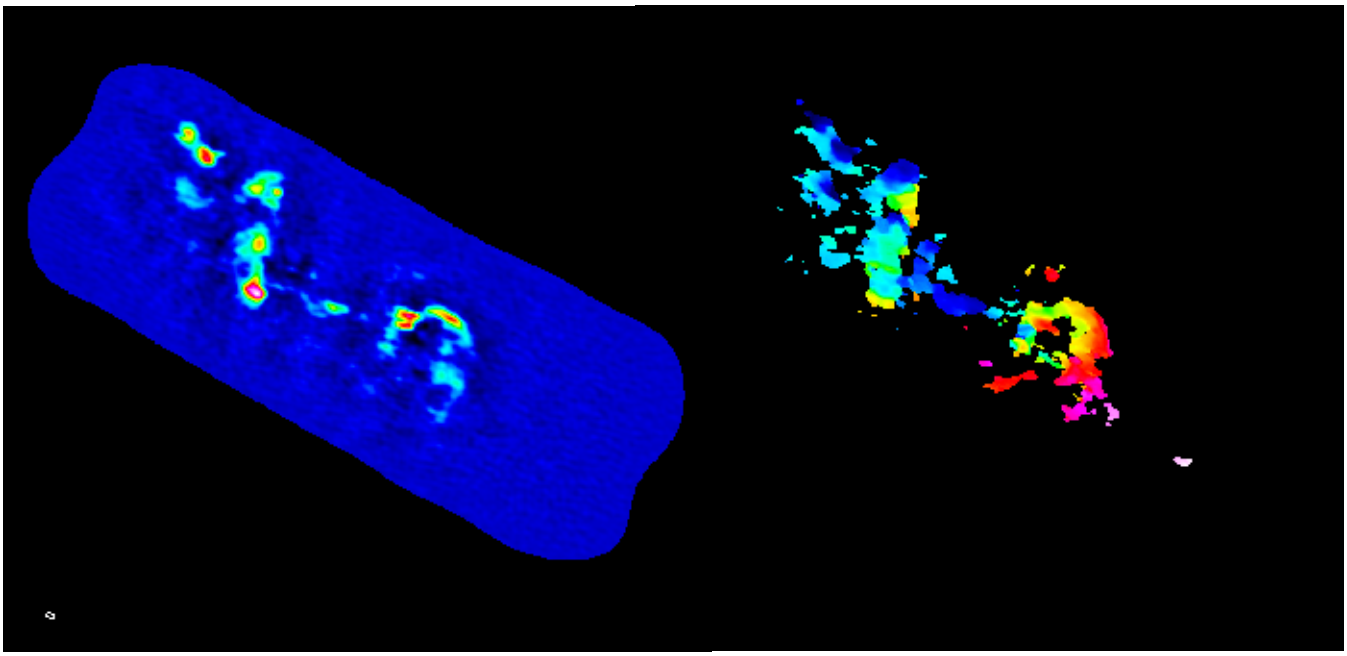
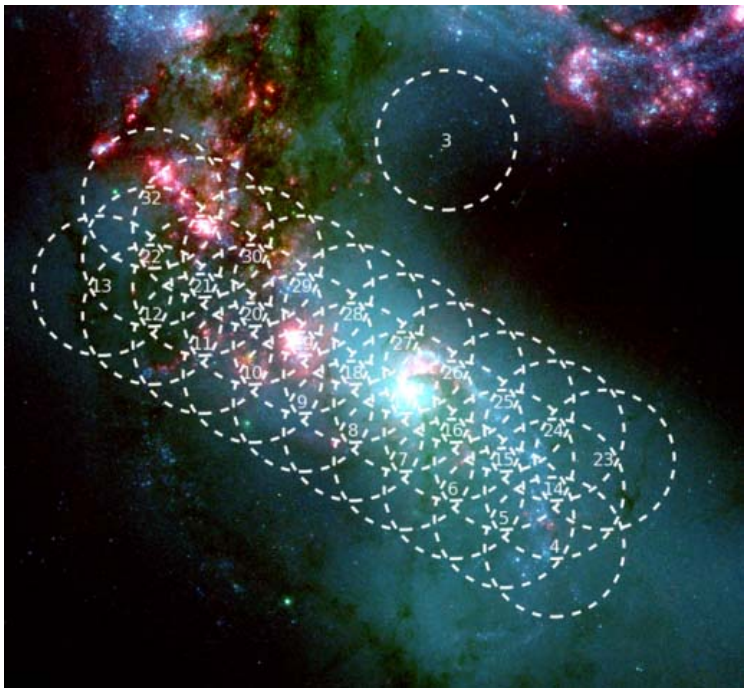
9. SCIENCE IPT

9.1 Commissioning and Science Verification

The second group of Science Verification data sets are nearly ready for release. This is as a result of intensive work by the Imaging Group, with very strong participation by the ARC's. Here is the Band 7 mosaic image of the southern part of the Antennae Galaxy, with the integrated CO J = 3-2 emission on the left and a representation of the radial velocity on the right. The pattern of pointing positions is superimposed on an HST image below.





The most important other piece of progress was on the calibrator survey. This is now running in a more or less routine manner and we are accumulating data on objects that will be suitable for phase calibration and as secondary amplitude calibrators.

The difficult weather conditions that have been plaguing us this winter continued. By the beginning of July we had more or less recovered from the big storm in mid-June, but conditions deteriorated on the 3rd with heavy cloud developing into a prolonged period of snow and high winds which lasted until the 10th. The maintenance crews managed to keep systems running right through this period, despite extremely difficult conditions, and we were nearly ready to restart operations on the 12th when a generator went down and the power dropped out. Because of the large accumulation of snow around the switchgear it was not possible to re-connect the antennas while the cryostats were still cold, so a full cycle of the cryo-systems was required. This meant that the recovery was quite prolonged – we restarted on the 16th with just three antennas operational, and had twelve back in operation by the 20th. There was then a period of good weather, including some extremely dry conditions which enabled us to make progress with Band 9 commissioning, but the month ended with a period of very high winds, reaching 43 m/s (which is 155 km/hr or 98 mph). Clearly there are many lessons to be learned from these experiences and a number of changes will have to be made if we are to cope with bad conditions when we have many more antennas.

Focussed effort by Computing, with support from the CSV team, resolved five out of the six known "blocker" problems with the real-time part of software version 8.0.3, which is the baseline for Cycle 0 observing. Some progress was also made on testing of development version 8.1. We are also working hard on improving the observational procedures and documenting them.

Inevitably rather little was achieved on solving the other technical issues for which "real" observations are needed to make progress. The most critical system problem remains the failures to achieve a proper lock, but spurious spectral features and a variety of antenna problems – shutters, encoders, drive motors, etc – are also still causing a lot of observing time to be lost. The biggest overall concern, however, is the fact that the slippage since the beginning of the year in the delivery of the antenna stations needed for the Cycle 0 extended array, with the associated infrastructure (roads, power and fibres) has mounted to at least six months. This means that it will definitely not be possible to start in that configuration. Even the antenna stations needed for the compact configuration are not yet available for use and this is at present the most obvious threat to being able to start the scheduled observations in September.

The focus of the commissioning activities is starting to shift to the Cycle 1 capabilities. This month there was a lot more work done on testing the ACA correlator, and good progress is being made there. We are also pressing forward with single-dish observing modes needed to provide the "zero-spacing" information. We are now able to make spectral-line maps but there is some way to go before we can get satisfactory results in the continuum case.

As usual Science IPT members from the Executives worked on antenna testing at the vendor sites and contributed strongly to the steady progress in delivering more antennas.

9.2 ASAC

There was an ASAC telecon on July 13th when the outcome of the applications process and preparation for the review and for the start of observations were discussed.

9.3 Staffing

Manual Aravena has joined the team as an ESO Fellow. He comes from a postdoc at NRAO and is familiar with our site having done his Ph.D. with the Nanten telescope. Two further offers of Commissioning Scientist posts have been made and we expect these to be accepted, at which point all the CSV posts will be filled. Some readjustment of people's shifts have been made necessary by a local baby boom: we welcome to the science-team extended family Mara van Kempen, Ines Martin Bernardo de Quiros, Gabriel Barkats Brandina and Leo Kneissl Rodrigues.