Jan 17

Dear George and Alan,

I have spent a few weeks reducing and analyzing the 3C236 run George and I made in December. Most of the time has been spent on trying to understand the phase fluctuations and write up a report about them.

The phase fluctuations at the VLA are very similar to that at Green Bank in character, except they are a bit worse at the VLA. It is difficult to tell yet but it appears that most of the phase fluctuations at the VLA are caused by the atmosphere. The typical phase error after calibrating like mad is still 10° at 6cm and 40 to 60° at 2 and 1.3cm. This is the phase error obtained after setting the phase to zero for the calibrator run and then observing the source for the next ten minutes.

In Figure 1 the best maps at 2cm (14.8GHz) and 1.3cm (22.5GHz) are shown along with the 35km maps at 2.7 and 8.1 GHz. The scales are about the same within the accuracy of XEROX reduction. The VLA maps are the best I can do after lots of fiddling with the cleaning area and the amount of data. At 2 and 1.3cm I threw out all of the data at elevation 25 degrees or less and this seemed to help. Also antenna 4 was noisy and some of this data I threw out. The 2cm map is really pretty good with a believability level at 15%. The 1.3cm map is only good to 30%. There is no way I can get rid of the 30%sidelobes near the main component. Sixty degree phase errors make for scruffy maps.

The maps show that the spectral index distribution across the sources is relatively constant. George determined this also by looking at the visibility amplitude data from the VLA. The 2.7GHz and 14.8 GHz maps are nearly at the same resolution and look about the same. The 22.5GHz map ~~does~~ is not as high a resolution and is of poorer qualitity as the 8.1 GHz map so that the higher resolution details in the 8.1 GHz map cannot be confirmed or analyzed for their spectral properties.

Is there a precession in p.a. with increasing frequency?

S-following peak seems fixed, while N peak drifts?