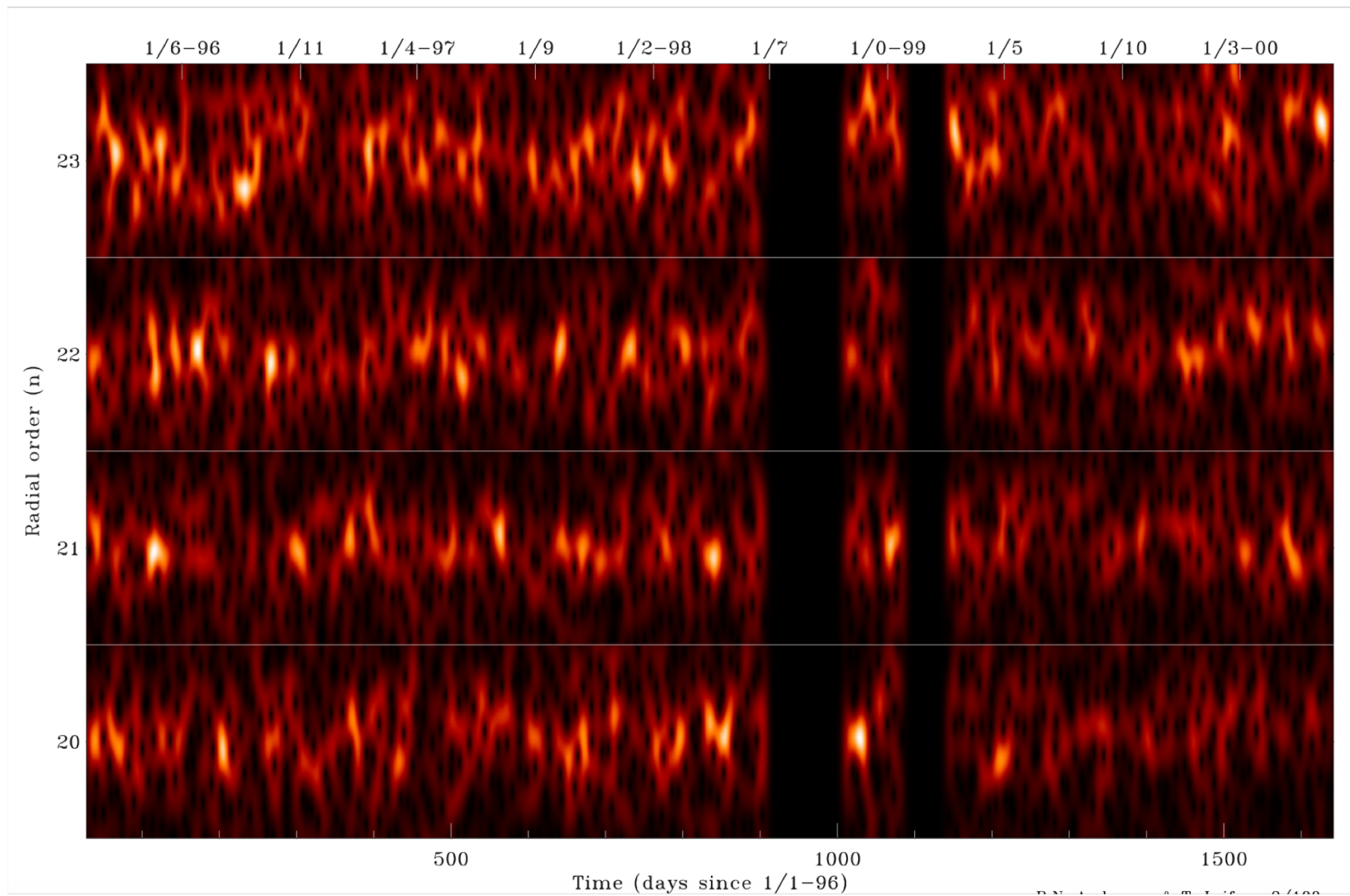


Amplitudes of Virgo low l p-modes over two solar cycles

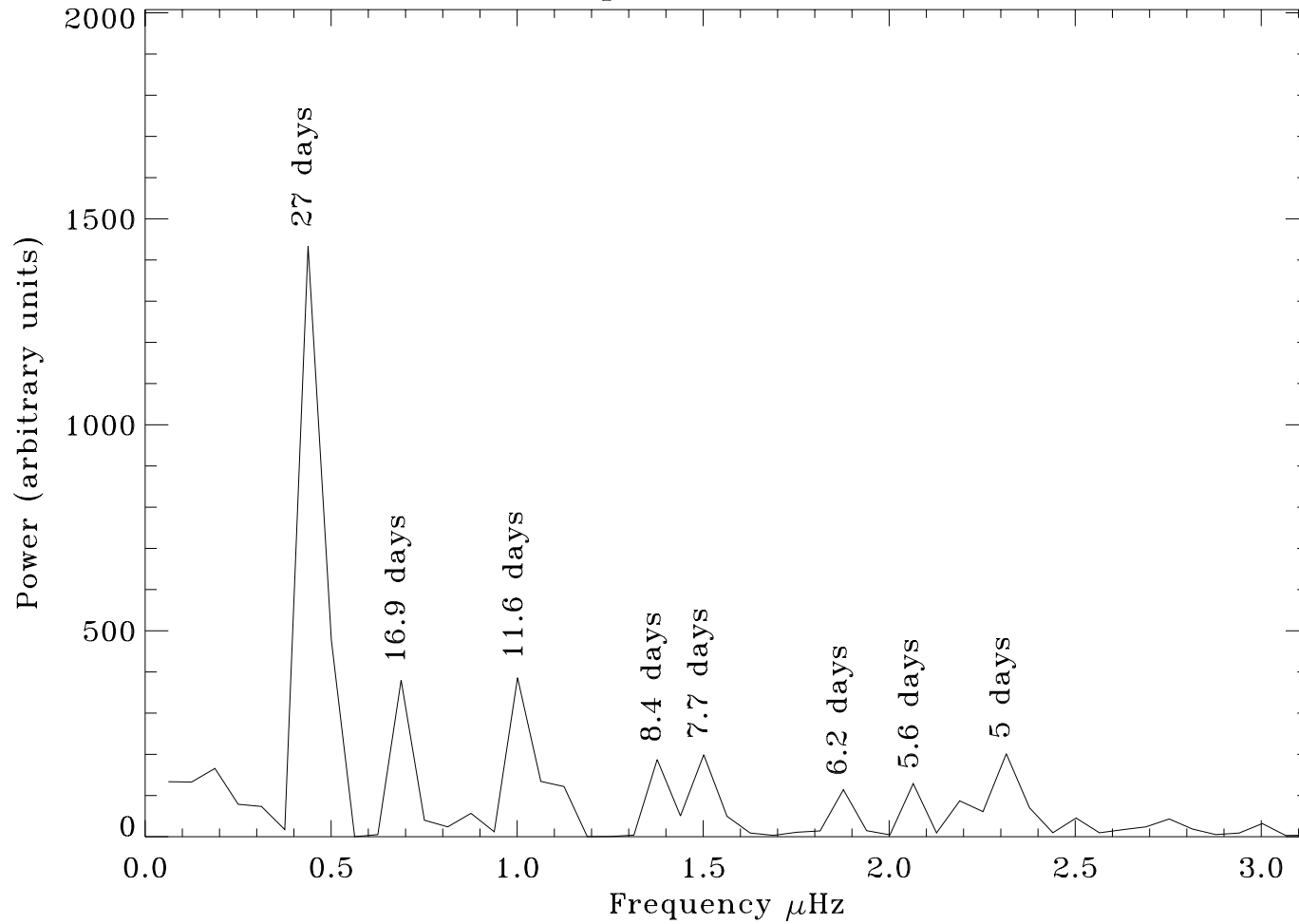
Torben Leifsen, Bo N. Andersen and Antonio Jimenez Mancebo

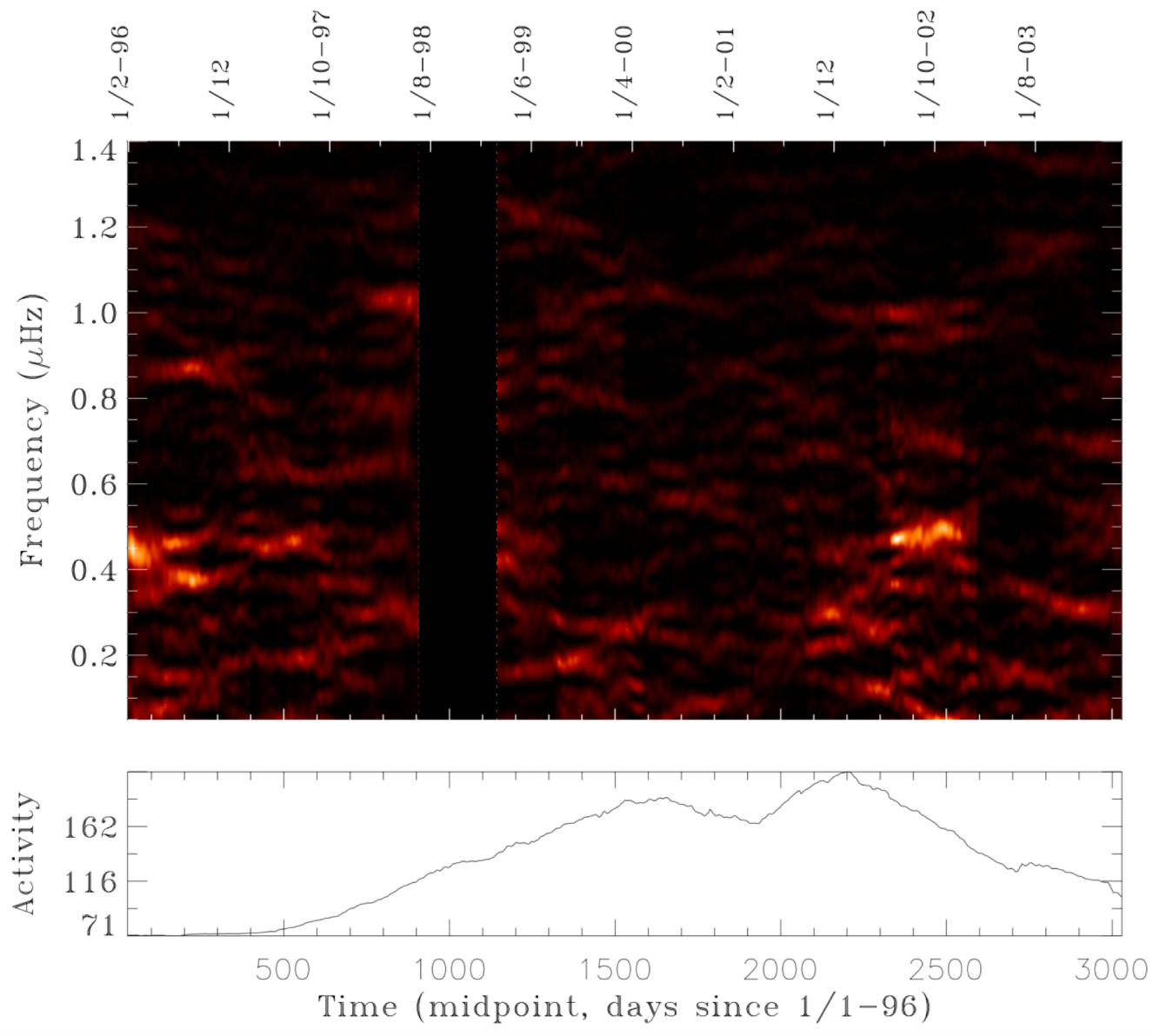
Previous work on variation of p-mode amplitudes

- We have studied the time variation of the amplitudes of $l=0, 1$ and 2 modes using a Hilbert transform on primarily VIRGO SPM data.
- We have found clear mode variations of especially the $l=0$ modes, these variations are global, not local. This is confirmed with LOI and MDI data.
- For the initial period of SOHO we saw a clear (and not understood) peak at the solar rotation of the $l=0, n=22$ peak. This was also confirmed by LOI, Bison and MDI.
- The current work expands this to 22.6 years and the details are changing, but still quite interesting.
- The work shows that the details of the excitation of p-modes are dominated by intermittent single events at specific frequencies together with a continuous low level of excitations spread over the line.

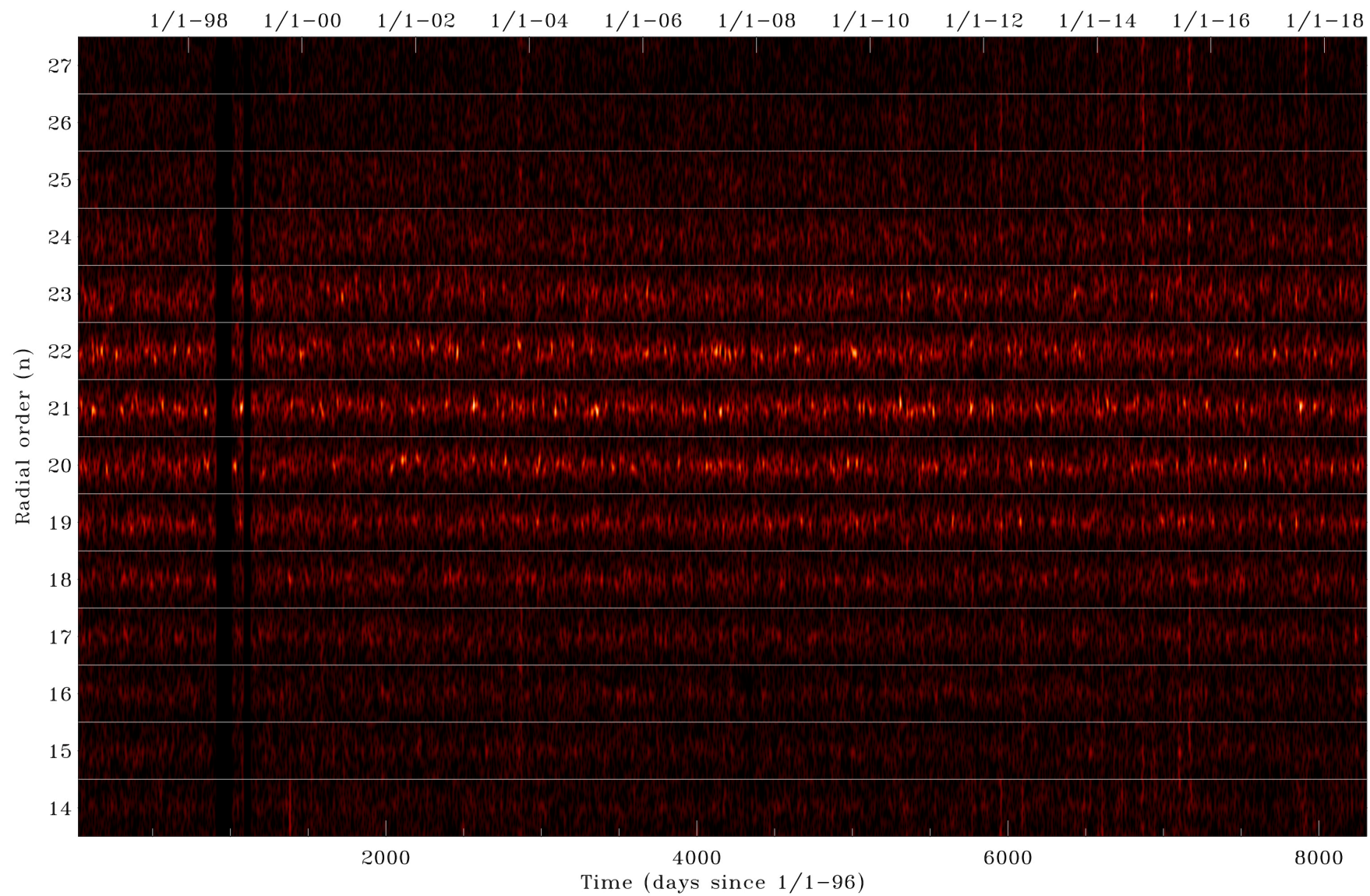


Power of wavelet amplitude in SPM blue channel, l=0



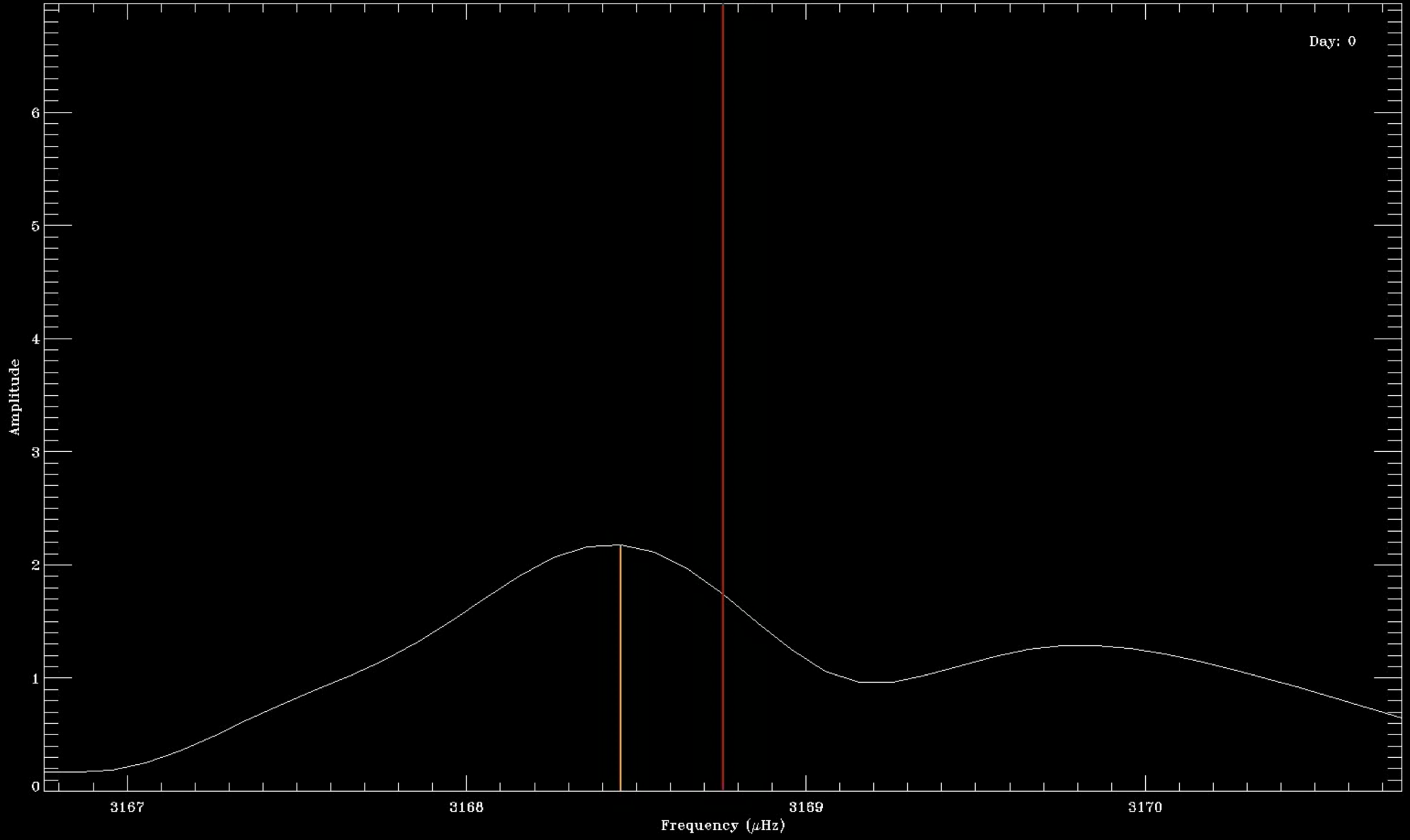


VIRGO SPM blue mode amplitude. $l=0$ $n=14-27$

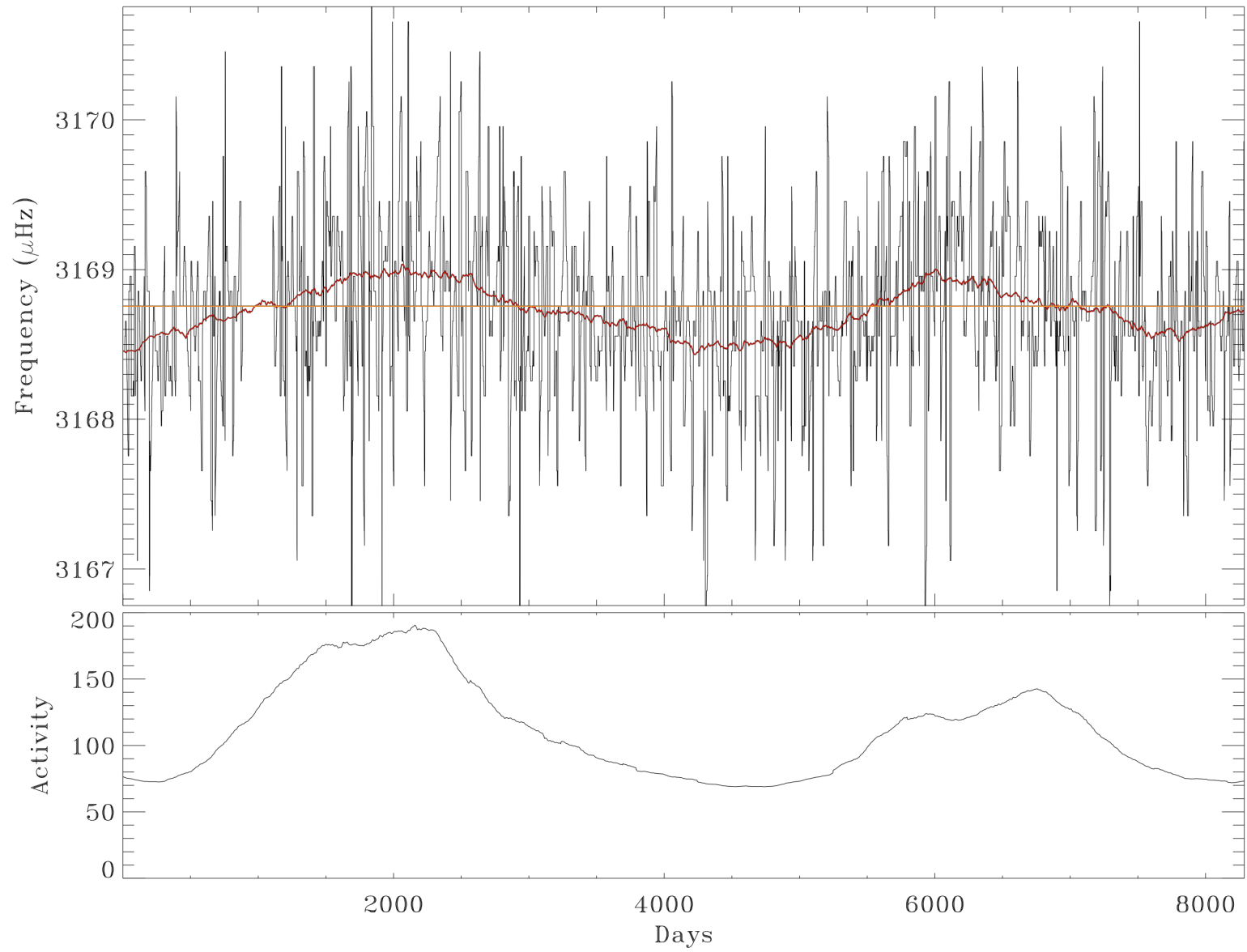


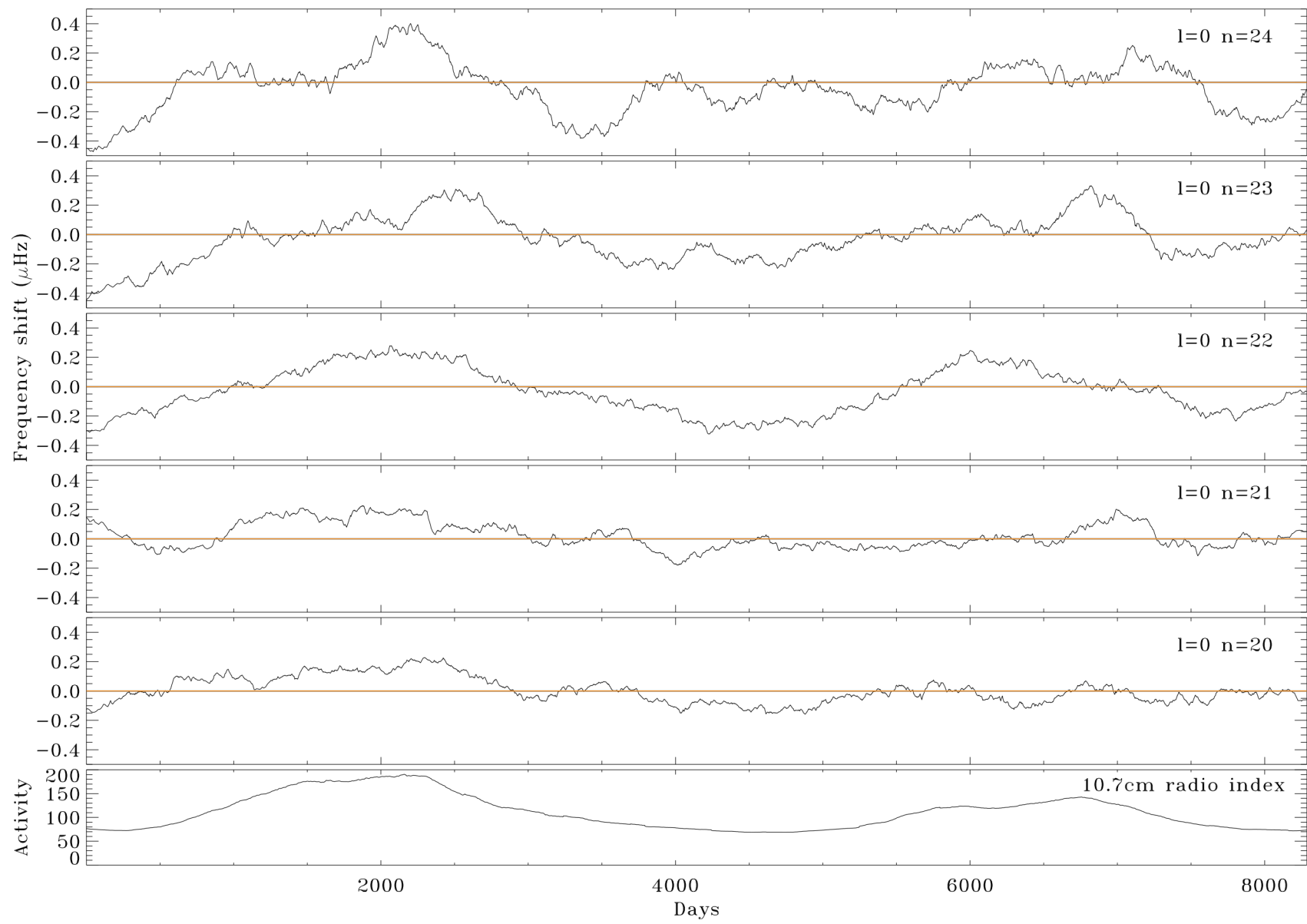
l=0 n=22 amplitude

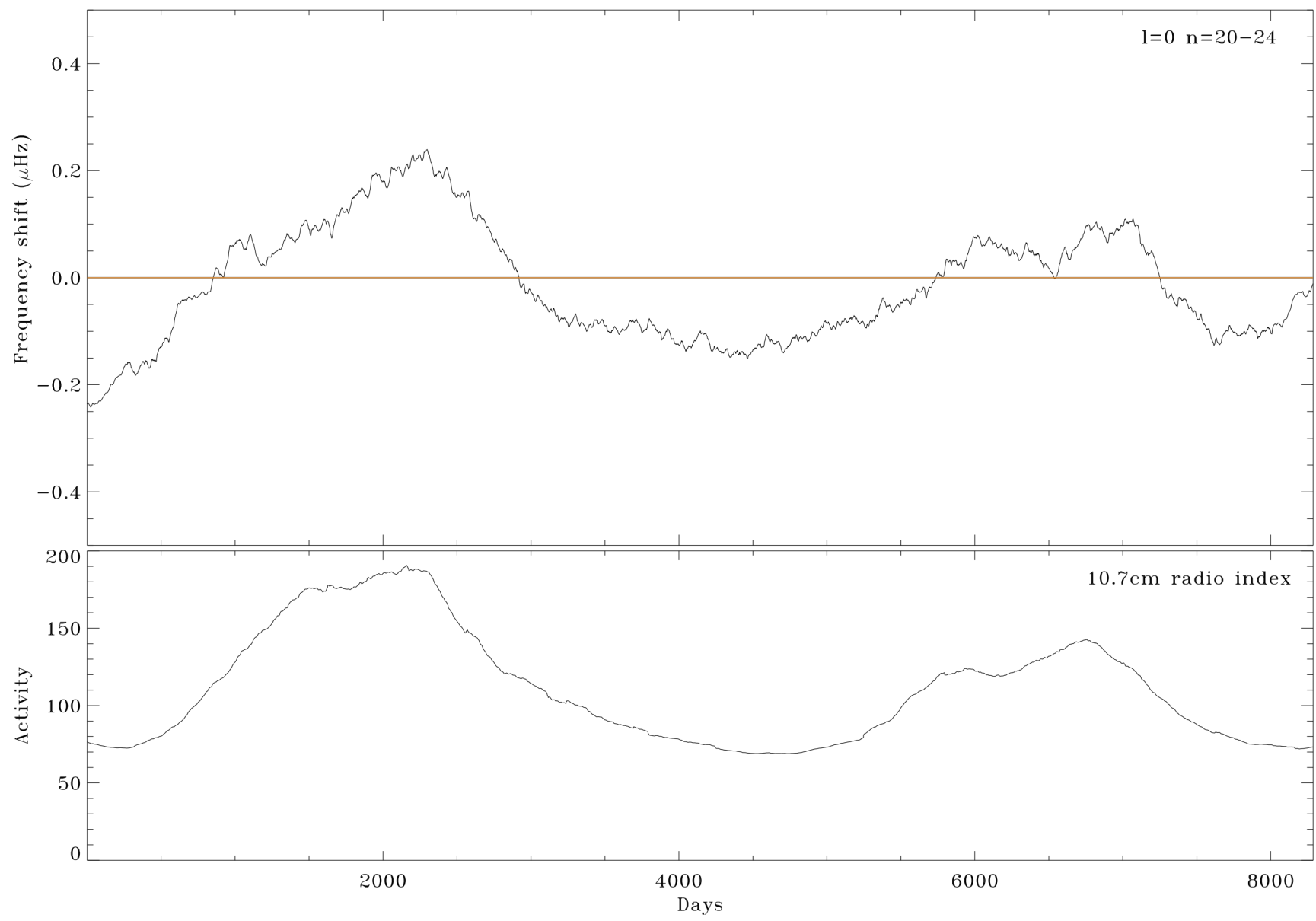
Day: 0

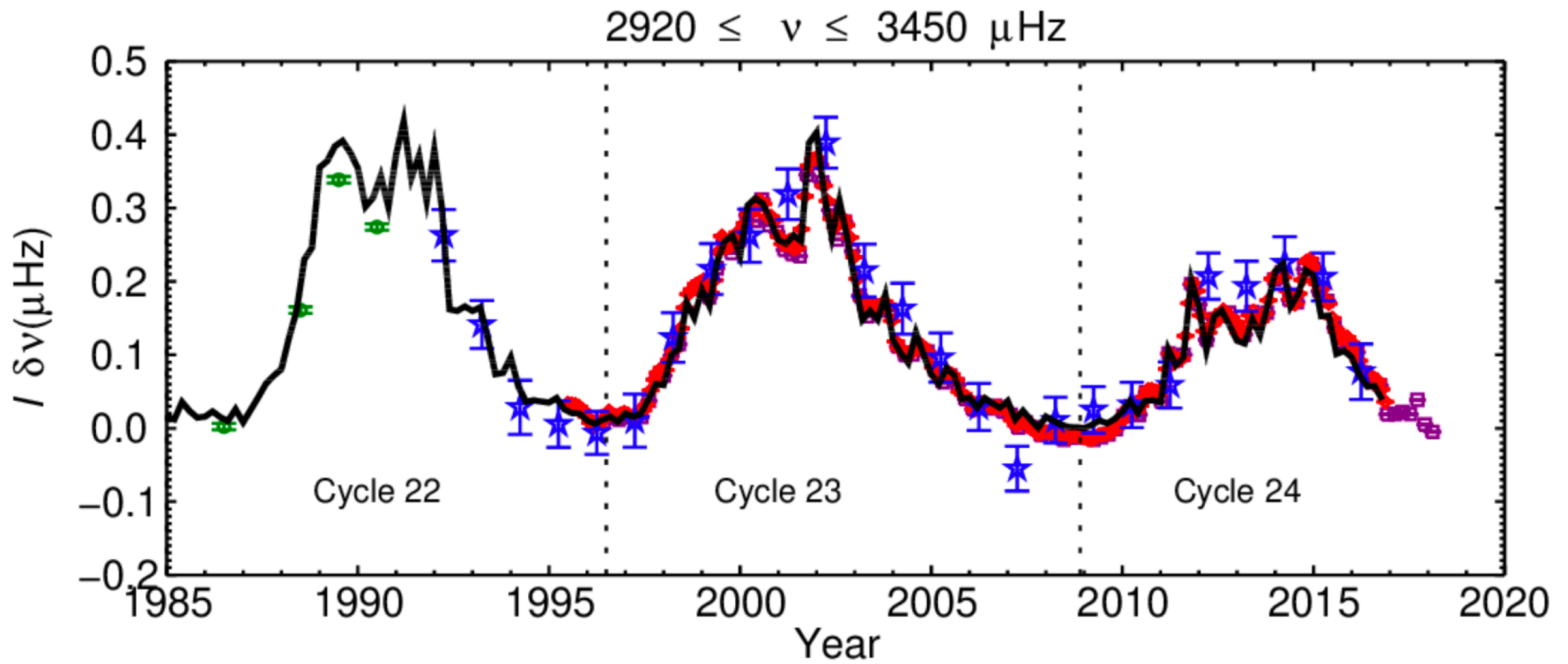


$l=0$ $n=22$ max mode frequency



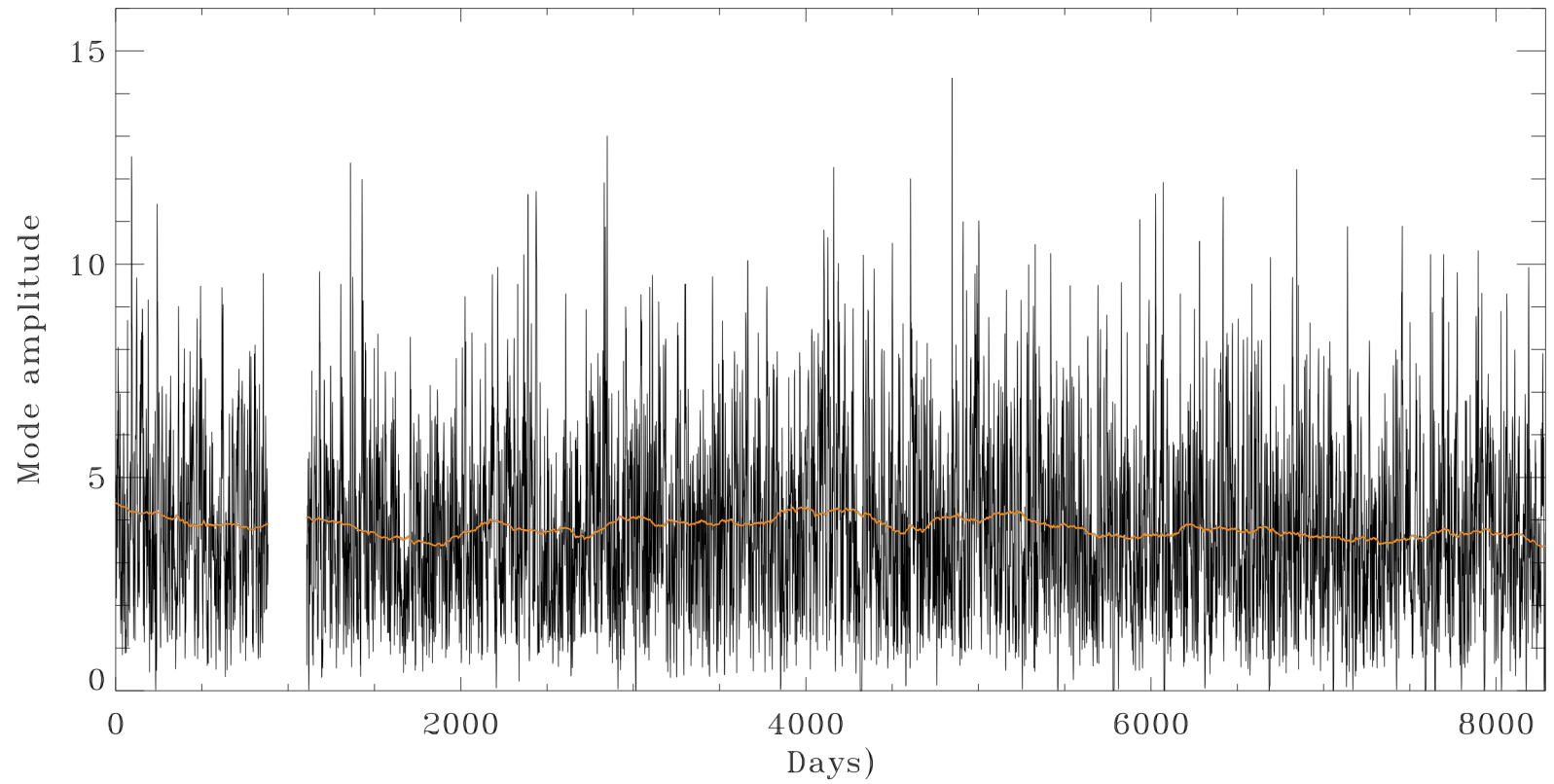




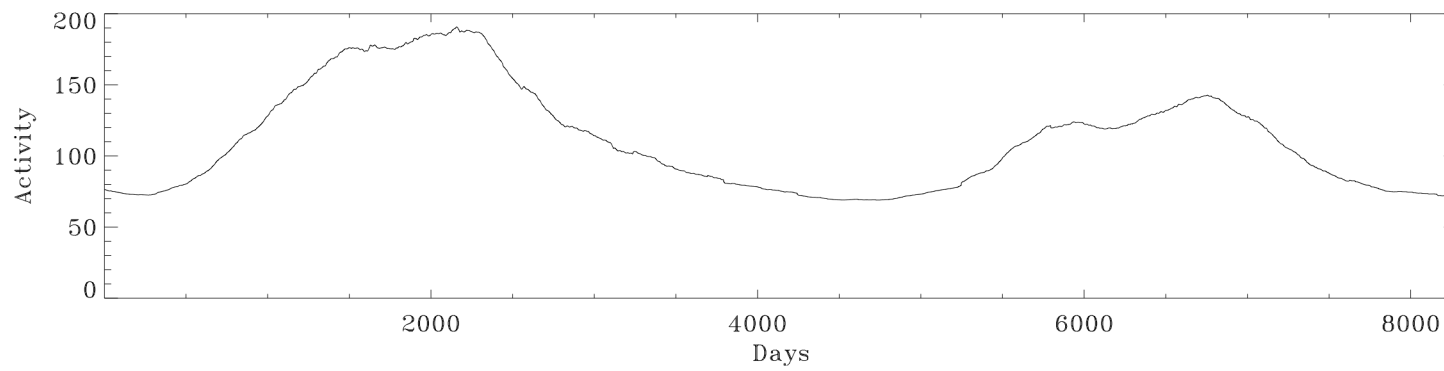
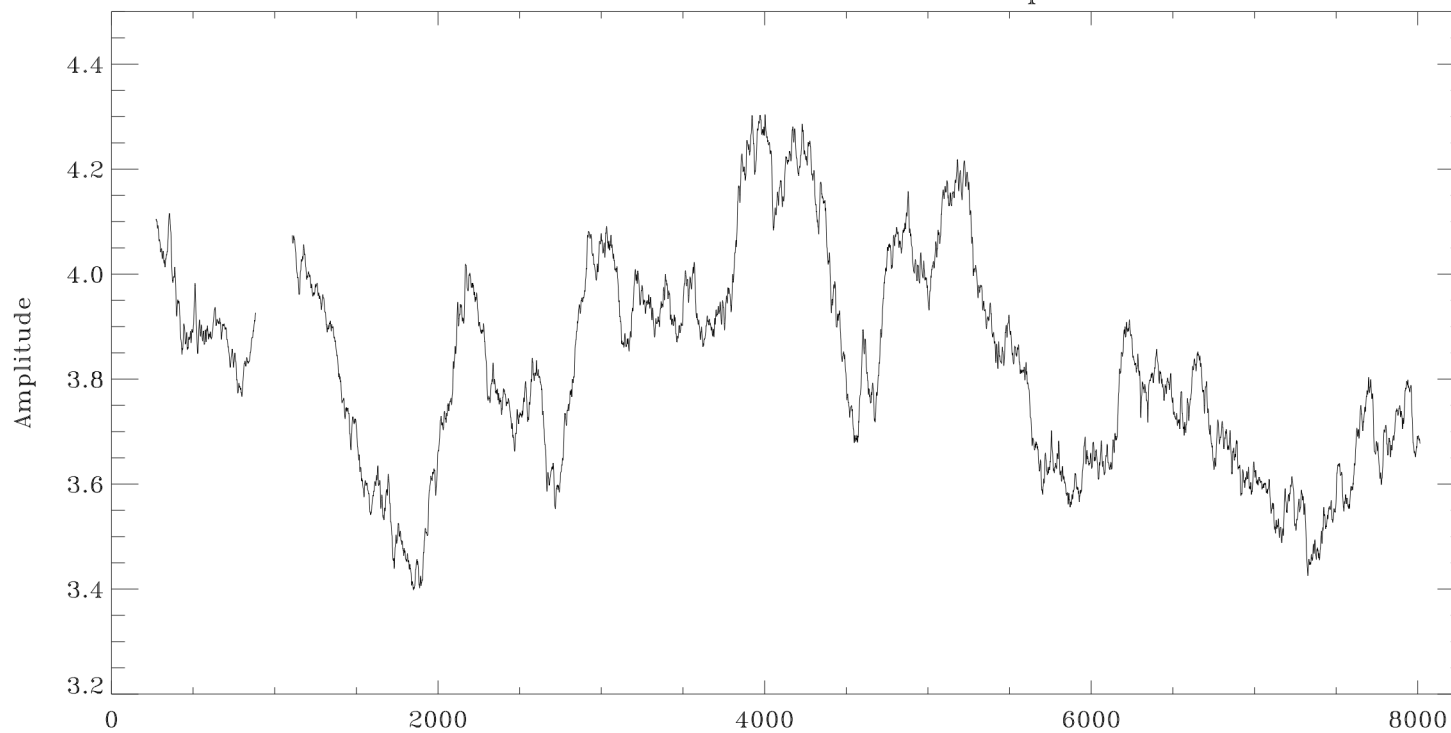


Howe et al. 2018

VIRGO SPM Blue $l=0$ $n=22$ mode amplitude



VIRGO SPM Blue $l=0$ $n=22$ mode amplitude



$l=0$ $n=22$ mode power

