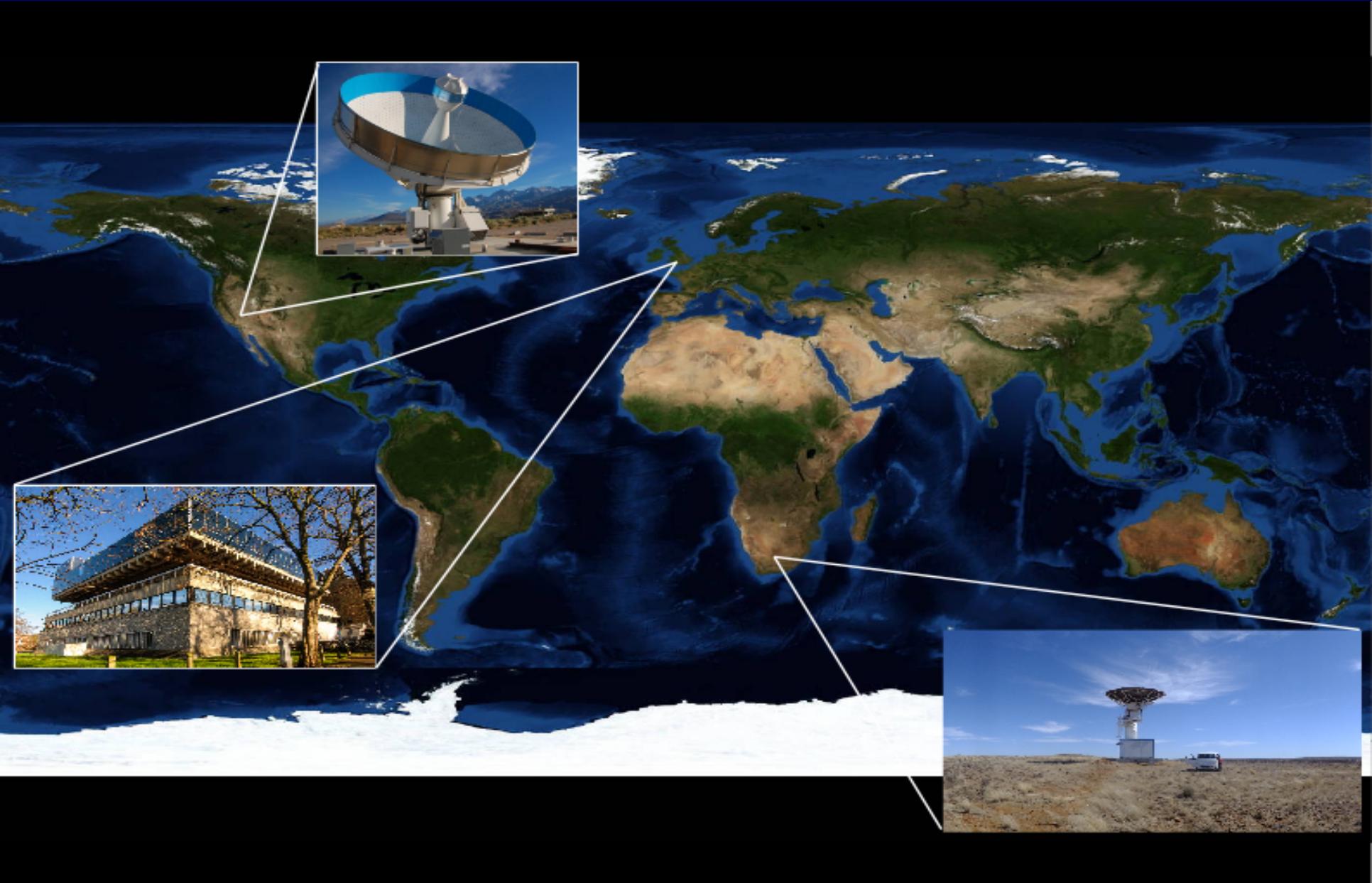
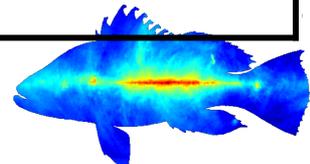
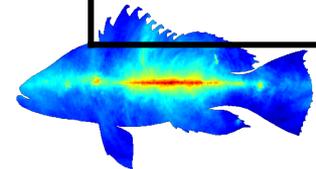


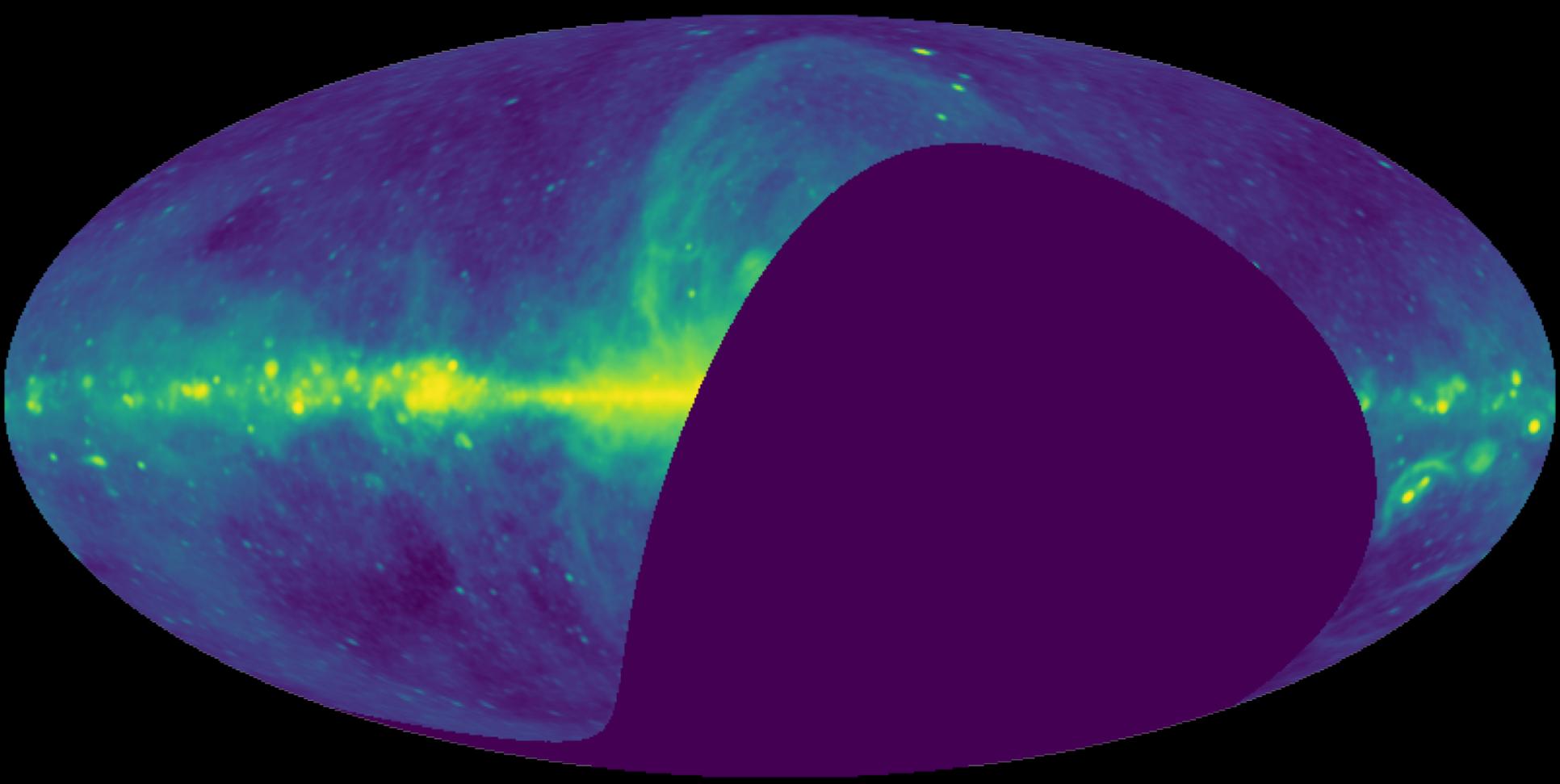
Mike Jones (for Angela Taylor)

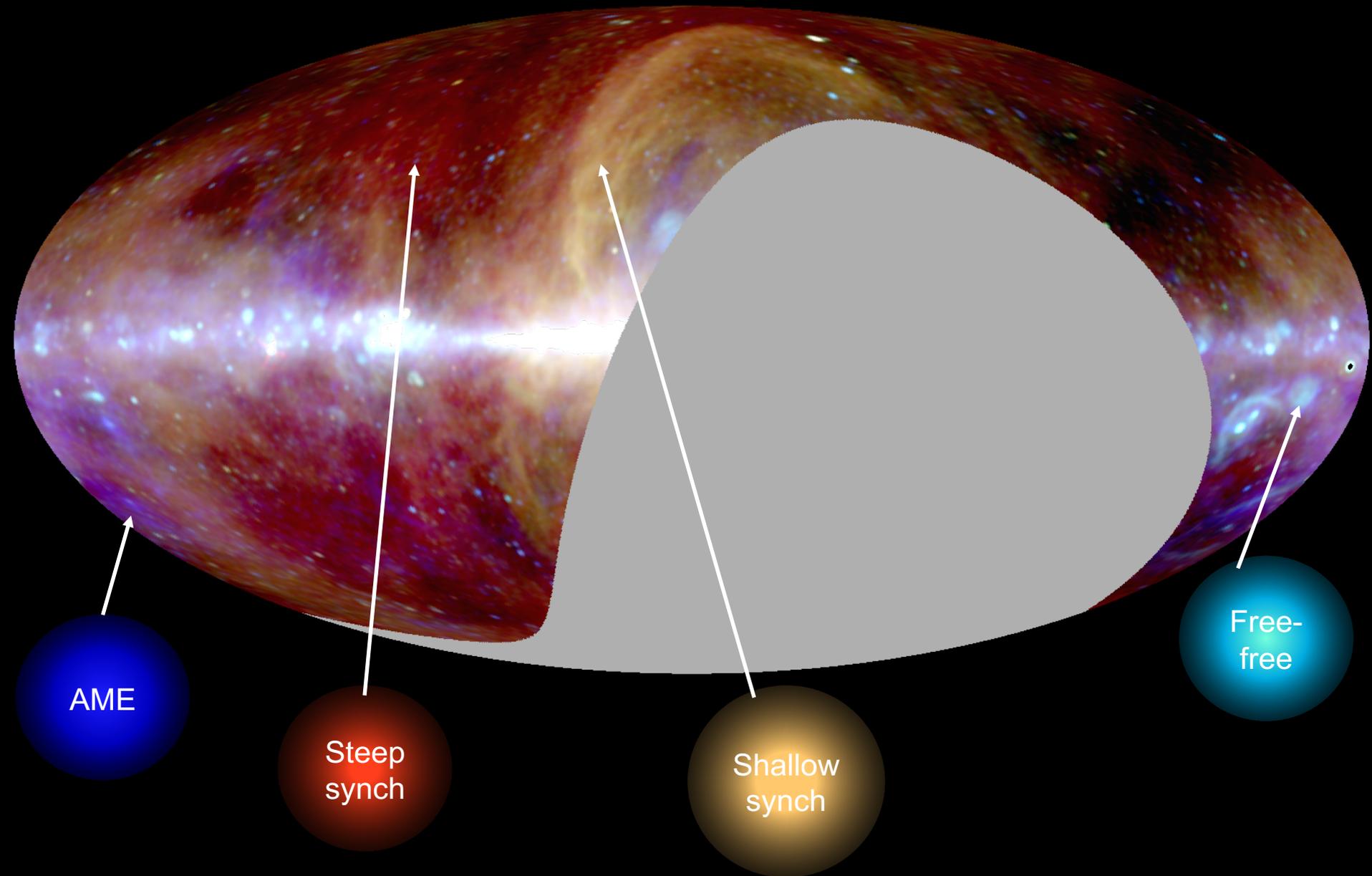
University of Oxford

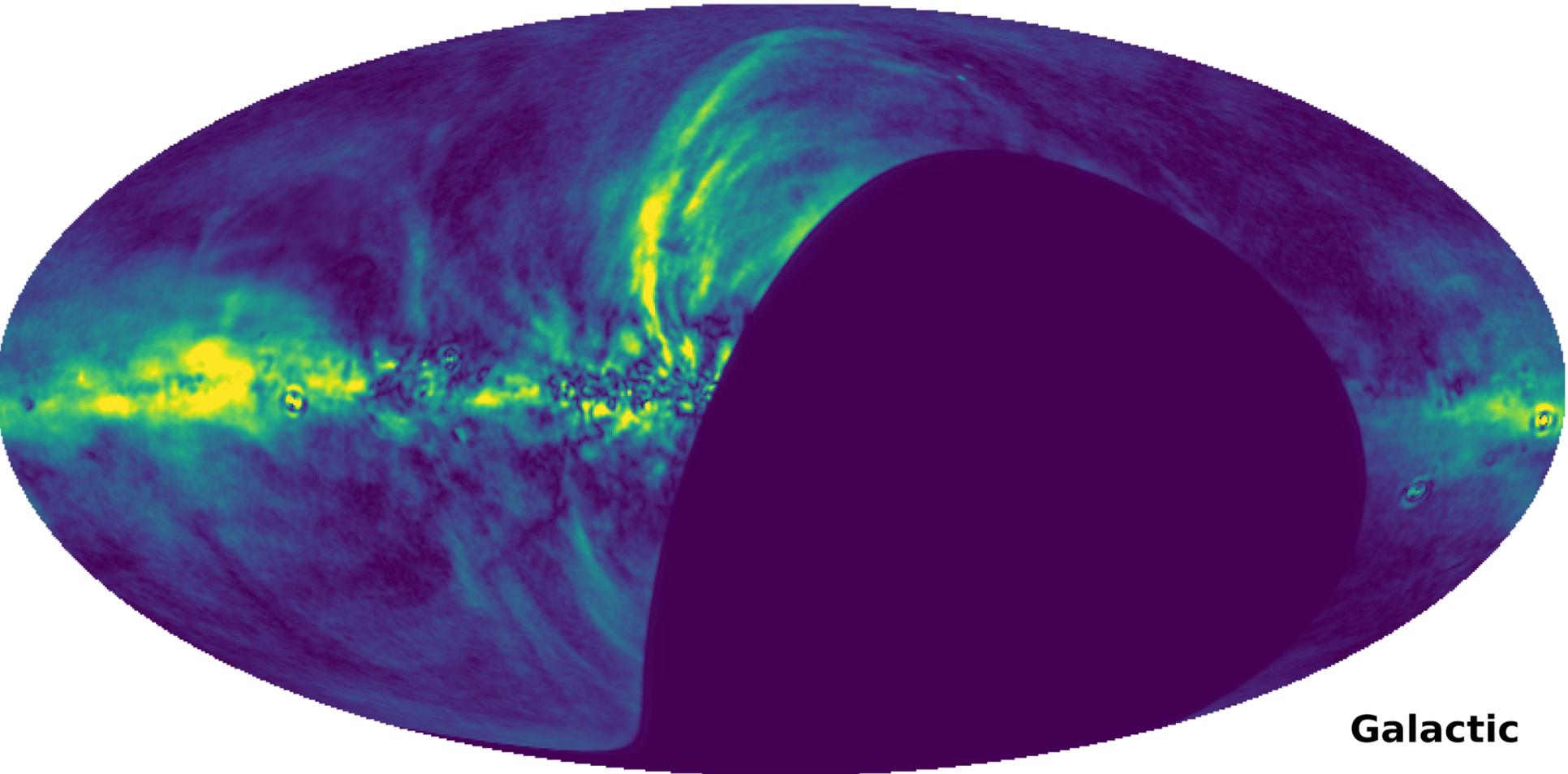


Sky-coverage	All-sky
Angular resolution	0.75 deg (45 arcmin)
Sensitivity	<p>< 0.1mK r.m.s in 1 deg beam (confusion limited in I)</p> <p>6000 μK-arcmin @ 5GHz == 0.75 μK-arcmin @ 100 GHz, $\beta = -3$</p>
Stokes coverage	I, Q, U, (V)
Frequency	1 (0.5) GHz bandwidth, centered at 5 GHz
Northern site	OVRO, California Latitude, 37.2 deg
Southern site	MeerKAT/SKA site, Karoo, South Africa Latitude -30.7 deg







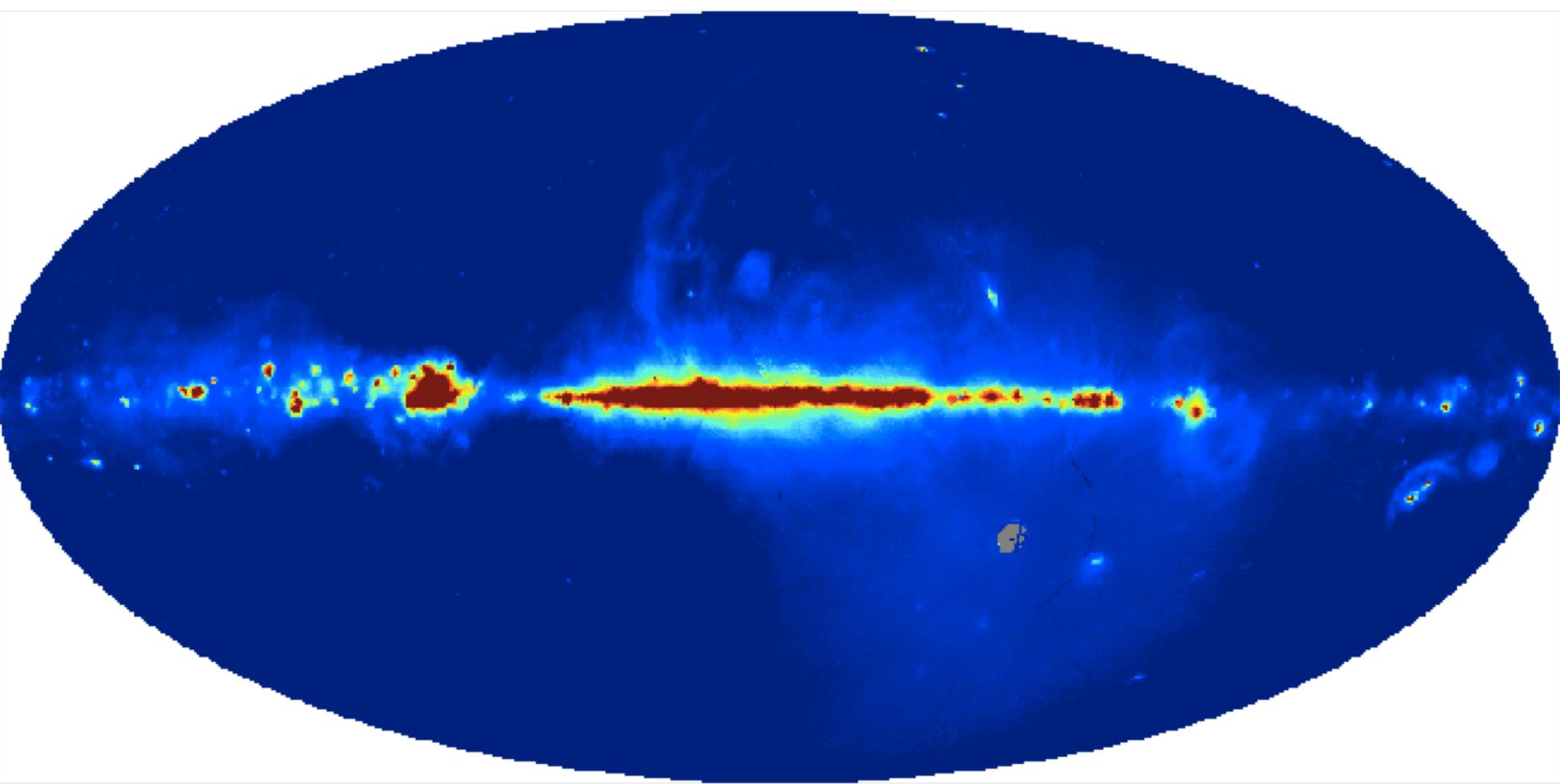


- Observations completed
- Maps finalized (modulo a very small calibration correction)
- Analysis in progress...papers out on:
- Overall project and instrumentation:
 - [Stevenson et al MNRAS, 484, 5377, 2019](#)
 - [Jones et al MNRAS 480, 3224, 2018](#)
 - [King et al MNRAS 446, 1253, 2015](#)
 - [King et al MNRAS 438, 2426, 2014](#)
 - [Holler et al IEEE Trans Ant Prop 61, 117, 2013](#)
- Simulations of component separation:
 - [Jew et al MNRAS in press, arXiv:1907.11642](#)
- Early results:
 - [Dickinson et al MNRAS 485, 2844, 2019](#)
 - [Taylor Moriond 53 proceedings 2018, arXiv1805.05484v1](#)
 - [Irfan et al MNRAS 448, 3572, 2015](#)

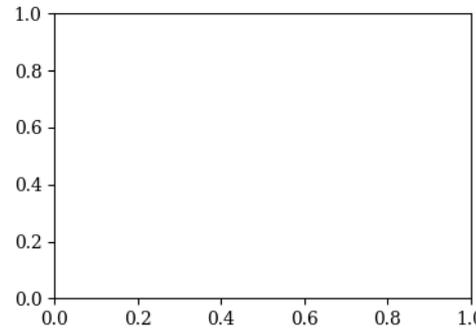
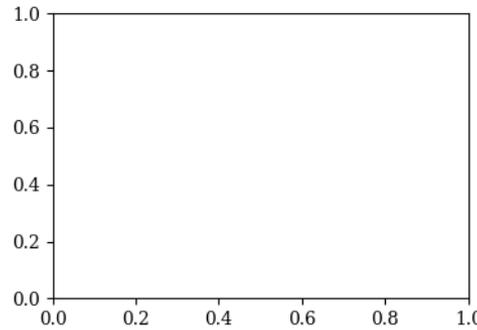
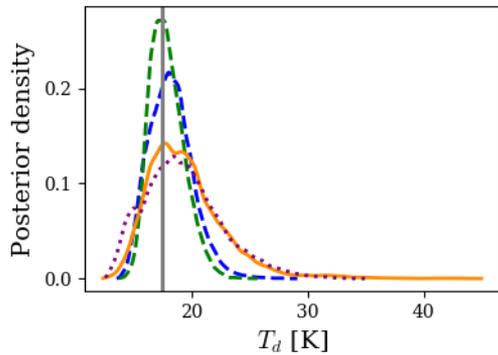
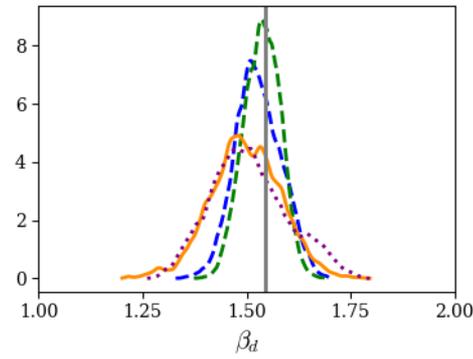
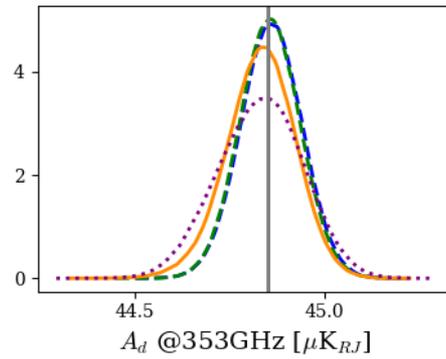
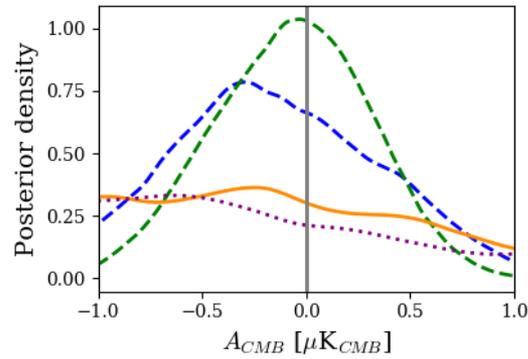
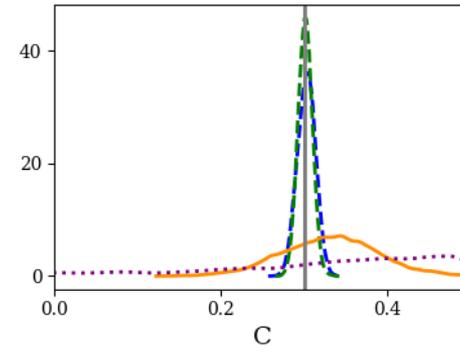
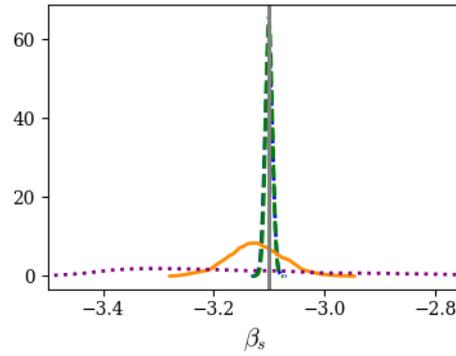
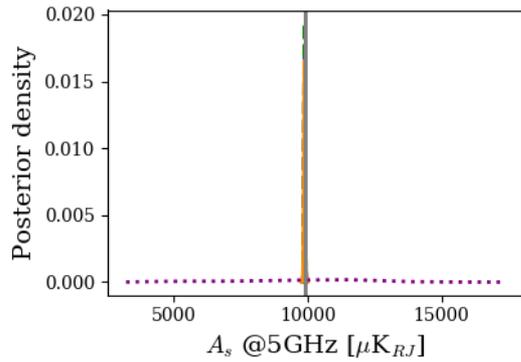
- Papers soon on:
 - Commissioning/TOD analysis details
 - Survey description and maps in I , Q , U
 - I analysis:
 - spectral indices from TT plots
 - template fitting
 - Point source catalogue and mask
 - AME λ Orionis (joint C-BASS/Quijote)
 - P analysis:
 - prediction of B mode contamination at ~ 100 GHz
 - angle correlations with other frequencies
 - polarization fraction
- ...followed by release of Northern survey maps

- Similar receiver to north – but frequency resolution (128 ch)
- Observations hampered by logistical/practical problems (mostly power and cryogenics related)
- New compressor installed 2019, now observing again
- At least 1 year of good data needed





- ELFS! (see previous talk...)
- ...but upgrade to C-BASS possible depending on ELFS progress
- X-BASS – upgrade of Northern receiver which could be ready to replace South receiver after 5 GHz survey complete
- Higher-resolution (7 arcmin) C/X band northern survey



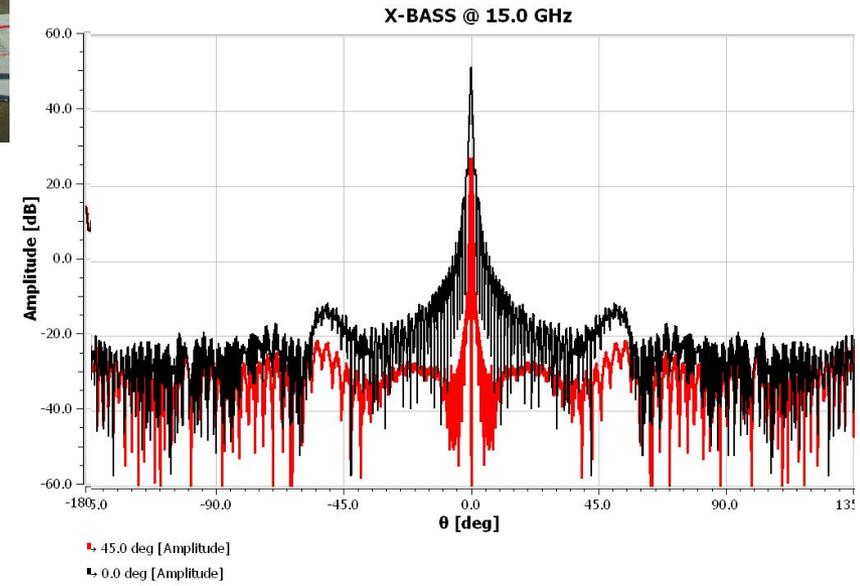
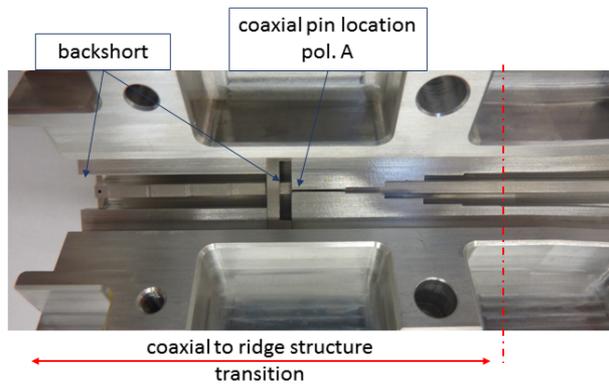
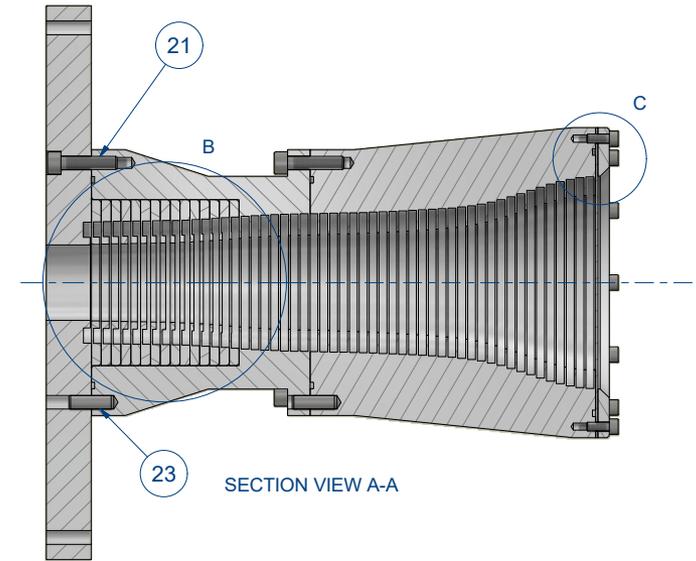
Planck+LtBIRD

...+CBASS

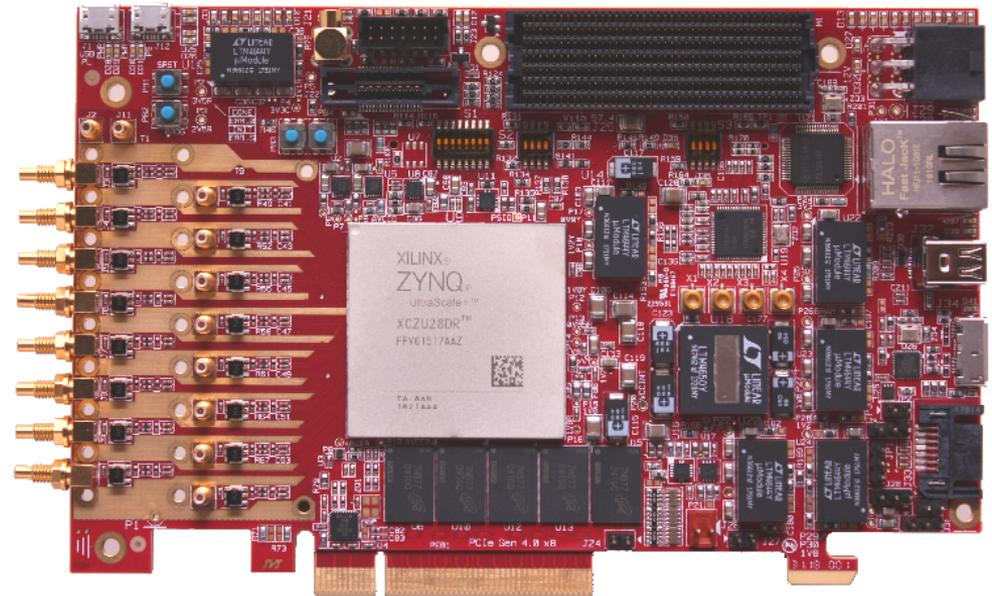
...+XBASS

...+ELFS

- 7 – 15 GHz, full band
- 4 MHz resolution
- Re-use C-BASS N receiver – new feed and LNAs
- Feed horn/OMT designed



- New digital backend using Xilinx RFSoc: 4 GS/s 12-bit ADCs on FPGA plus DACs to generate calibration signals
- Could be ready to go on C-BASS South telescope as soon as 5 GHz survey complete...with a bit of funding.



- Just commissioning a 4-8.5 GHz receiver on 29-m antenna at Goonhilly, UK
- Digital I, Q, U spectrometer backend using SKA technology
- Designed for Satcoms and e-MERLIN interferometer – but also capable of C-BASS-style survey

