

Marcus Leech
CCERA Open house, Feb 2, 2020

CCERA

The Canadian Centre for Experimental Radio Astronomy



About CCERA

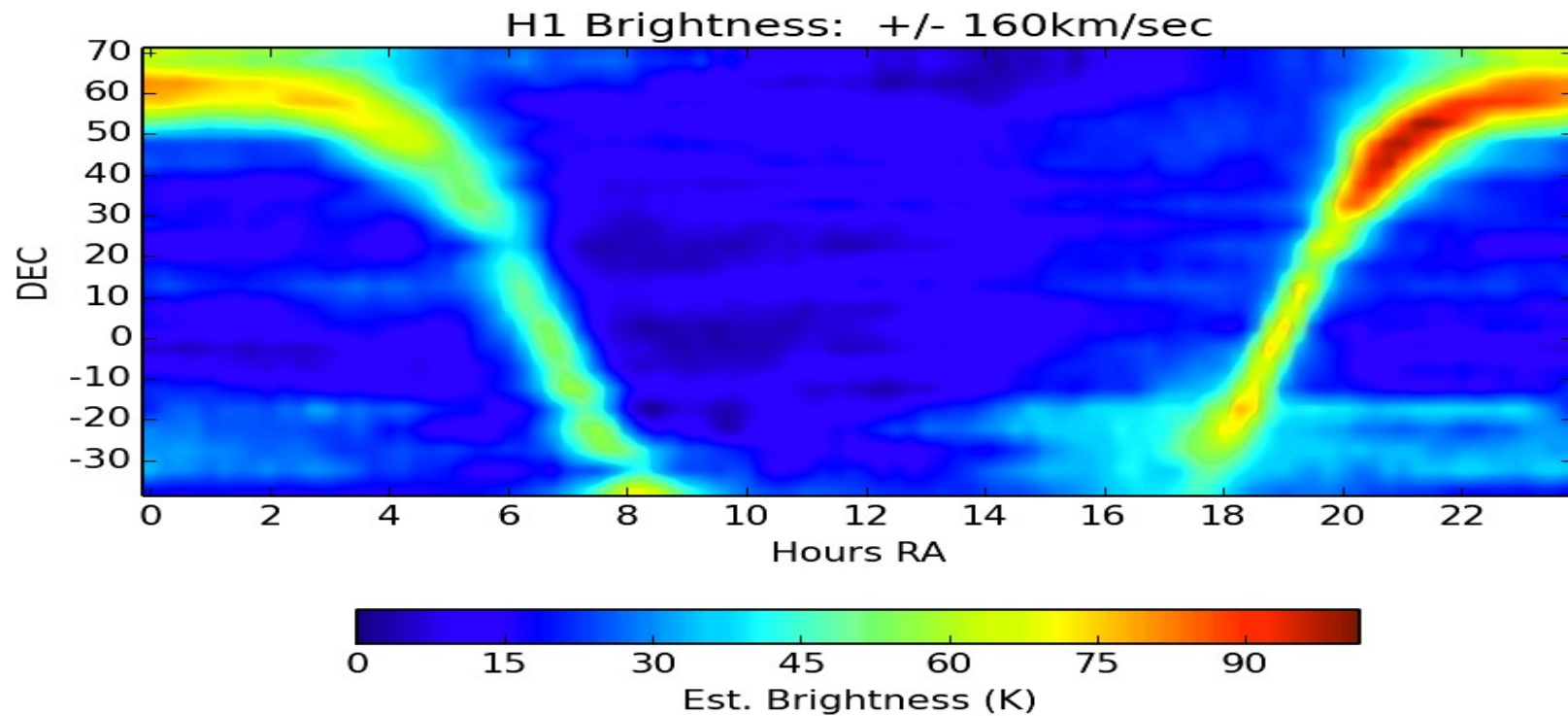
- Founded in 2016 as a not-for-profit
 - From the “ashes” of SBRAC
- Conduct small-scale radio astronomy experiments
- Contribute to education and public awareness
- Design low-cost systems that are reproducible by others
- Design software that is usable by others
 - Mostly SDR
 - Mostly GnuRadio based
- Main cast of characters
 - Marcus Leech, Notional President
 - Gary Atkins, Notional Vice President
 - Doug Yuill, Notional “other things”

2019

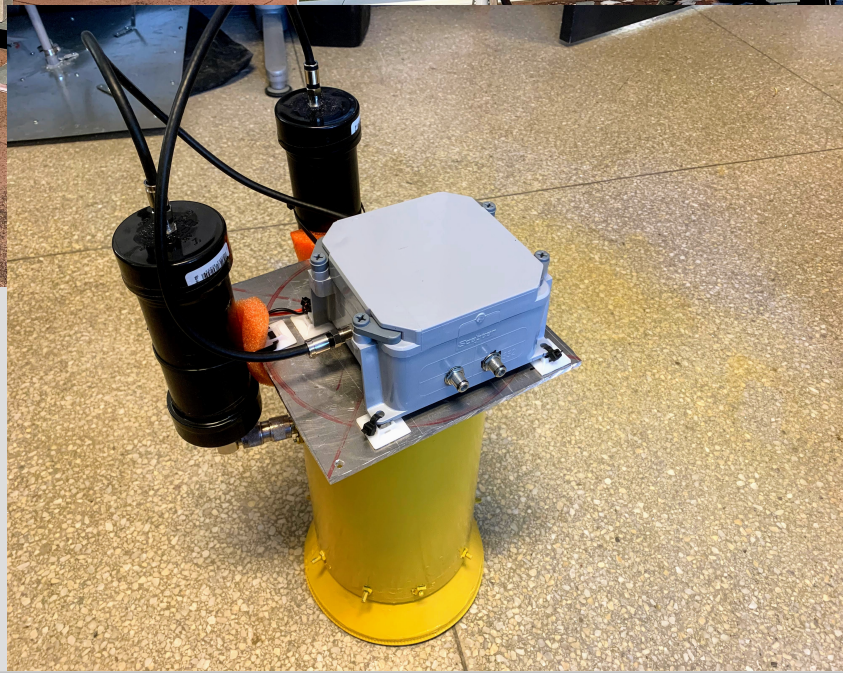
- Continue collaboration with Carleton U.
 - Support undergraduate program with 21cm data
 - Start getting a pulsar-system working for student use
- Build-out more receiver and supporting equipment in receiver room
 - Full-height racks now available
 - Commence shielding receiver room
- Consulting services to NRCan for ionospheric monitoring/research
 - Designed a new SDR-based riometer for future deployment with NRCan.
- Start design work on a new generic “radio astronomy workstation” for sale to support our work.
- Upgrade 21cm system twice
 - Upgrade to 1.8m dish
 - Upgrade to dual-polarization

21cm work

- Completed Northern Sky survey from DEC: -35 to +70
- Produced high-quality sky intensity map:



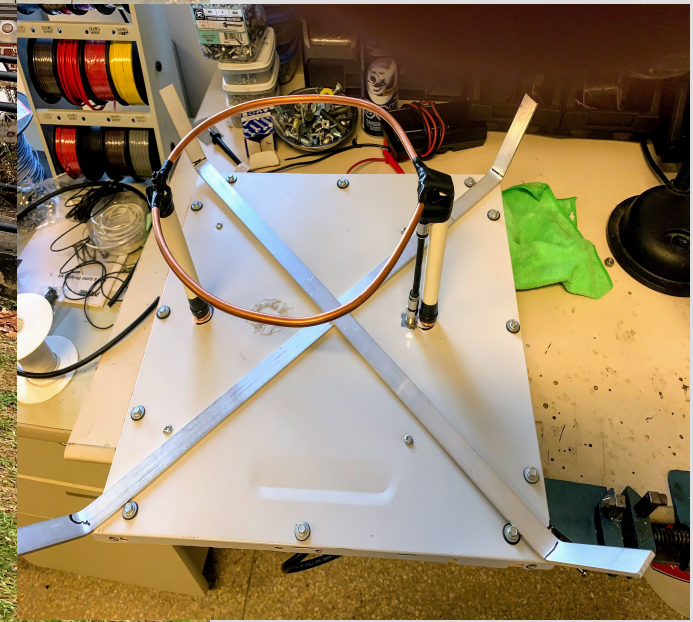
21cm infrastructure



Pulsar Infrastructure



*Pointing:
B0329+54*



Control Room



2019 Not without anxiety

- A serious fire in late spring 2019 in another part of campus
- Much attention from Fire Marshal
- Our sublet landlord couldn't meet requirements imposed by authorities.
 - Left precipitously in July 2019
 - Our future was decidedly uncertain for most of the summer
- Main landlord started to remediate, allowing us to continue here, along with another tenant (EMSEC Solutions).
- Has its “up” sides. We have better access, and could do things like put up signage, etc.

Outlook for 2020

- Continue to support Carleton U.
 - Upgrade 21cm dish to 2.5m
 - Improve motion control
 - Better sensitivity
 - Higher resolution
- Pulsar work
 - RFI remediation
 - Software
 - Control room shielding
- Try to get IDEA project off the ground (again)
 - Orchestrated detection of Deuterium around the NCP.
- Possible deployment of Mini-CHIME
 - FRB research