PFISR: Poker Flat Incoherent Scatter Radar

(November 2014)

Pulse Types

AMISR pulse types, a qualitative summary:

- Uncoded Long Pulse
  - Low range resolution, high sensitivity
  - Best suited for F-region measurements above peak
- Alternating Code
  - High range resolution, medium sensitivity
  - Best suited for E- and lower F-region measurements
- Barker Code
  - Highest range resolution, high sensitivity
  - Best suited for D- and lower E-region measurements

Note: There are many other radar pulse types, including: psuedo-random phase codes, poly-phase codes, amplitude modulated, frequency modulated, etc.

3 Flavors

Can propose one of 3 "flavors" of experiments:

- **E- and F-region:**
  - alternating code
  - long pulse
- **D-region focus, E- and F-region context:**
  - barker code
  - alternating code
  - long pulse
- **F-region only:**
  - long pulse only

E- and F-region

Example Mode, WorldDay35:

- 480 us pulse, alternating code, 30 us bauds, 10 us samples
- 330 us uncoded long pulse, 20 us samples
- Both upshifted and downshifted plasma line channels
- 11 Beams
- 1/1 pulses split between long pulse/alternating code
- F-region ion velocity field reconstruction and E-region neutral winds