Consider the TA as a massive collection of arrays

Use Delauney triangulation to define 580 triads

Mapping atmospheric gravity waves - applications for Numerical Weather modelling

de Groot-Hedlin, Hedlin and Walker, 2013
Filter & cross-correlate to detect coherent signals
(Hedlin EGU, 2016)

\[ t_{ij} + t_{jk} + t_{ki} < t_{cut} \]

Consistency criterion, Cansi, 1995

Frank Vernon (UCSD)
May-August: 2010-2014
(Hedlin EGU, 2016)
May-August: 2010-2014

(Hedlin EGU, 2016)
Wavewatch-III swell field and microseism beams. When a large long-period swell hits the Cdn coast, the lower attenuation frequency microseism beam (red arrow) switches to that azimuth, while the double frequency microseisms (magenta arrow) stays on the SSW azimuth (these swells trigger microseisms across entire continent (Schulte-Pelkum et al 2004).
Case Study: 11-12 Aug 2011 MCS Events

• 0900 UTC 12 Aug 2011 Feature Analysis

Positive Feature #1
Lifetime: 10.1 h
Max Pert.: 4.9 hPa
Med. Speed: 22.4 m s⁻¹

Negative Feature #1
Lifetime: 9.0 h
Max Pert.: 5.8 hPa
Med. Speed: 22.1 m s⁻¹

Positive Feature #2
Lifetime: 7.6 h
Max Pert.: 4.5 hPa
Med. Speed: 20.8 m s⁻¹

Frank Vernon (UCSD)
Prominent Feature Statistics

- Spring (March, April, May) 2011 Assessed Feature Tracks
  - Positive perturbations red, negative blue

- Majority of assessed features:
  - Originate across southern and central Great Plains
  - Move in east-northeasterly directions

Frank Vernon (UCSD)
Prominent Feature Statistics

- Summer (June, July, August) 2011 Assessed Feature Tracks
  - Positive perturbations red negative blue

- Feature origin shifts northward during summer months
- Propagating direction shifts to easterly and southeasterly

Frank Vernon (UCSD)
Prominent Feature Statistics

- Spring and Summer Perturbation Occurrence “Heat Maps”

- Plots interpreted as “this 5 km grid box location experienced X unique perturbations during the period assessed”

- Seasonal shift northward in occurrences assessed