

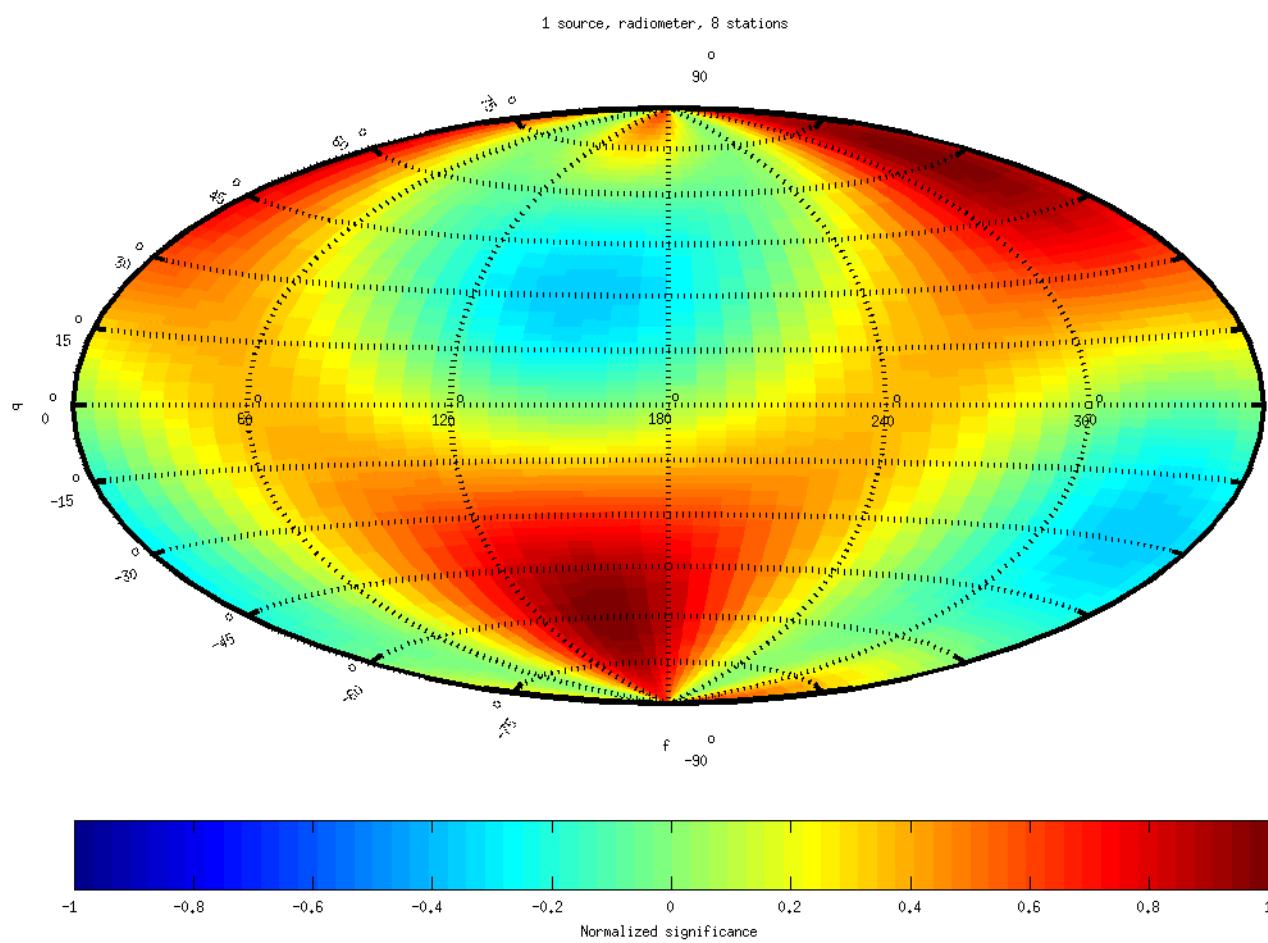
# S-wave Tests

## Noah Bittermann

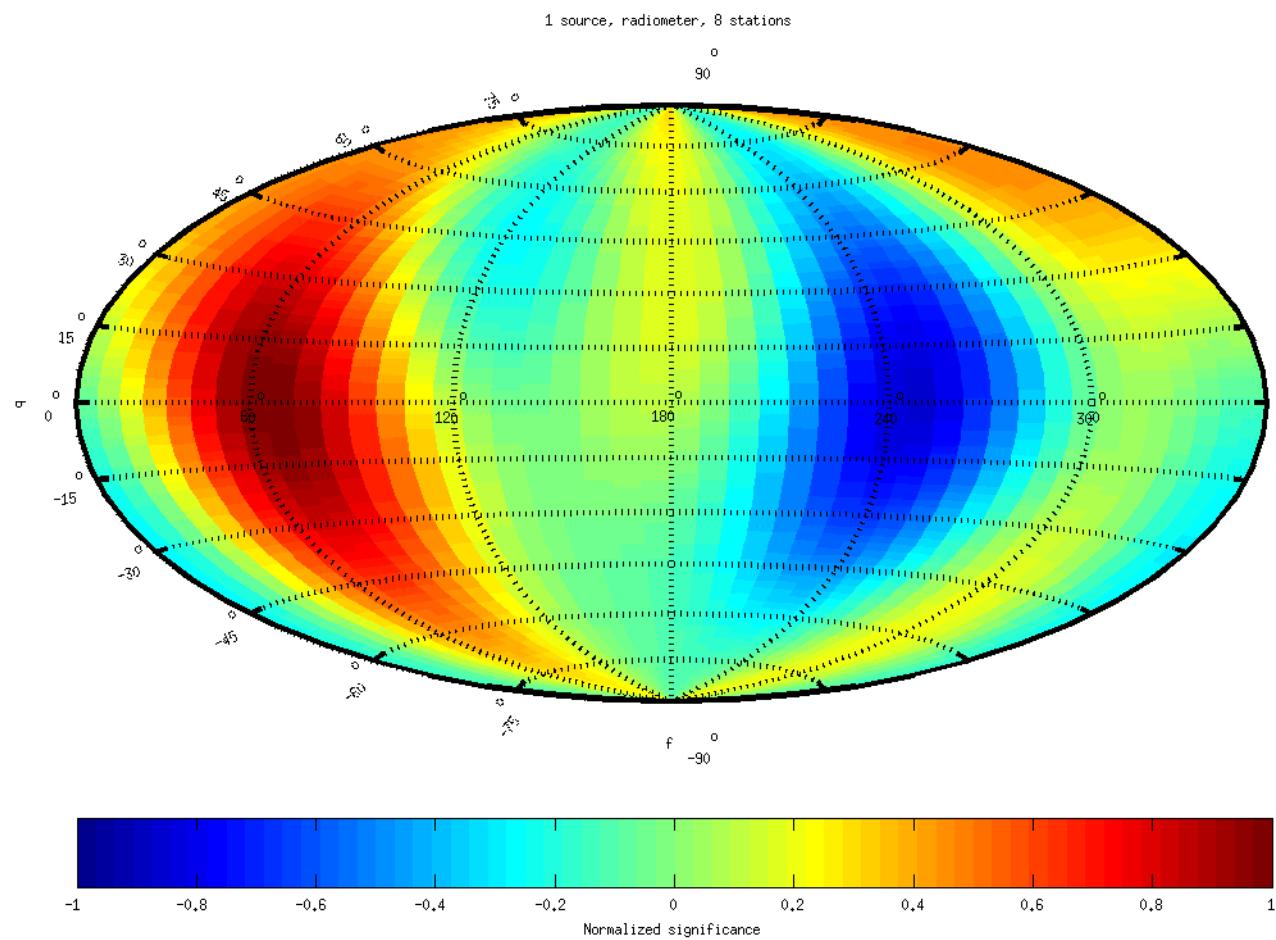
# Scale Testing

- In this section, the scale is varied. We have ( SI units):
  - number of detectors = 8
  - phi = 90
  - theta = 60
  - psi = 45
  - monochromatic source of freq = 1
  - amp = 10
  - detloc = scale \*
    - 0.2356    0.2256    0.2556
    - 0.2257    0.2978    0.1350
    - 0.5375    0.9833    0.4396

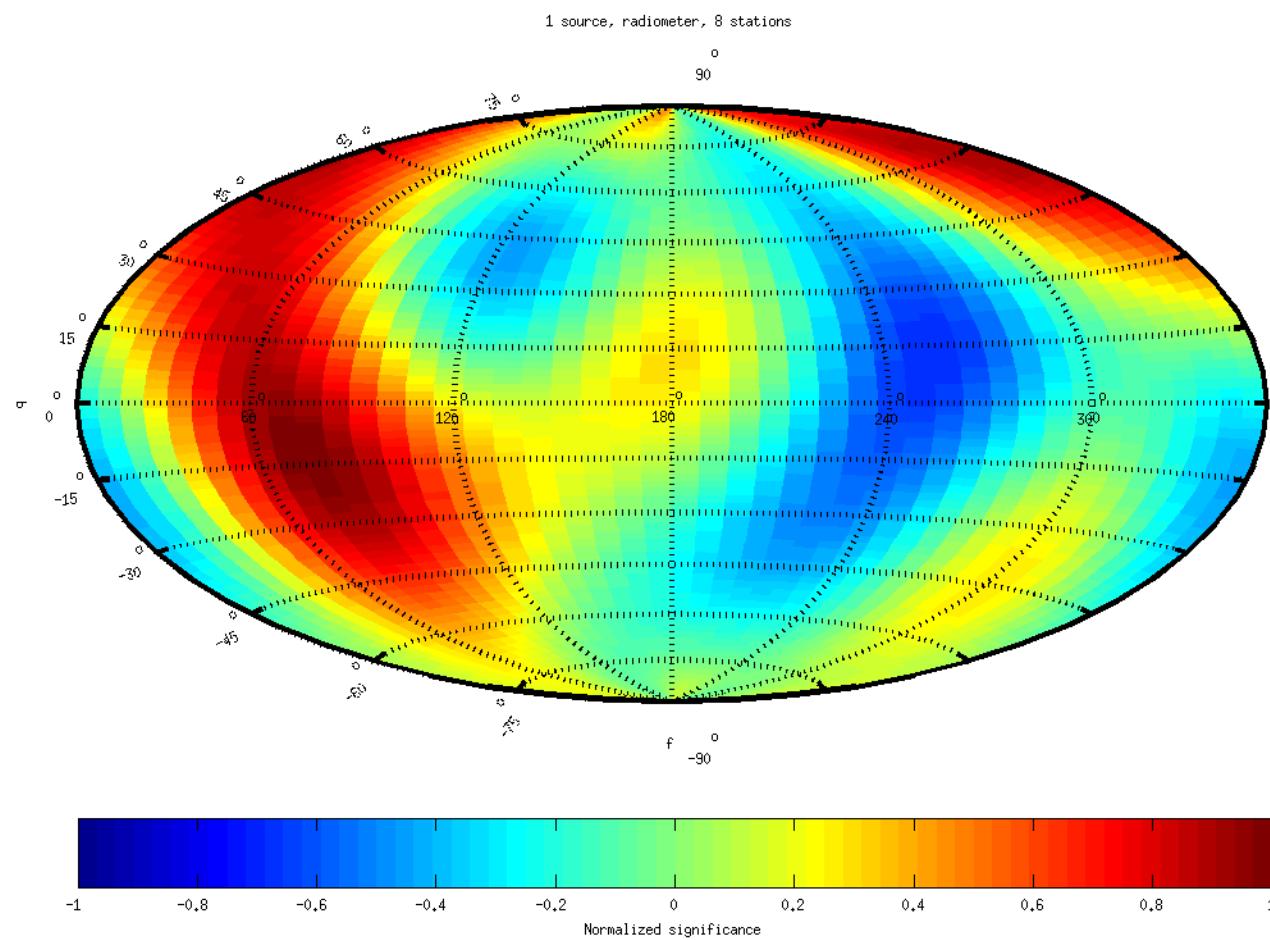
# Scale = 1



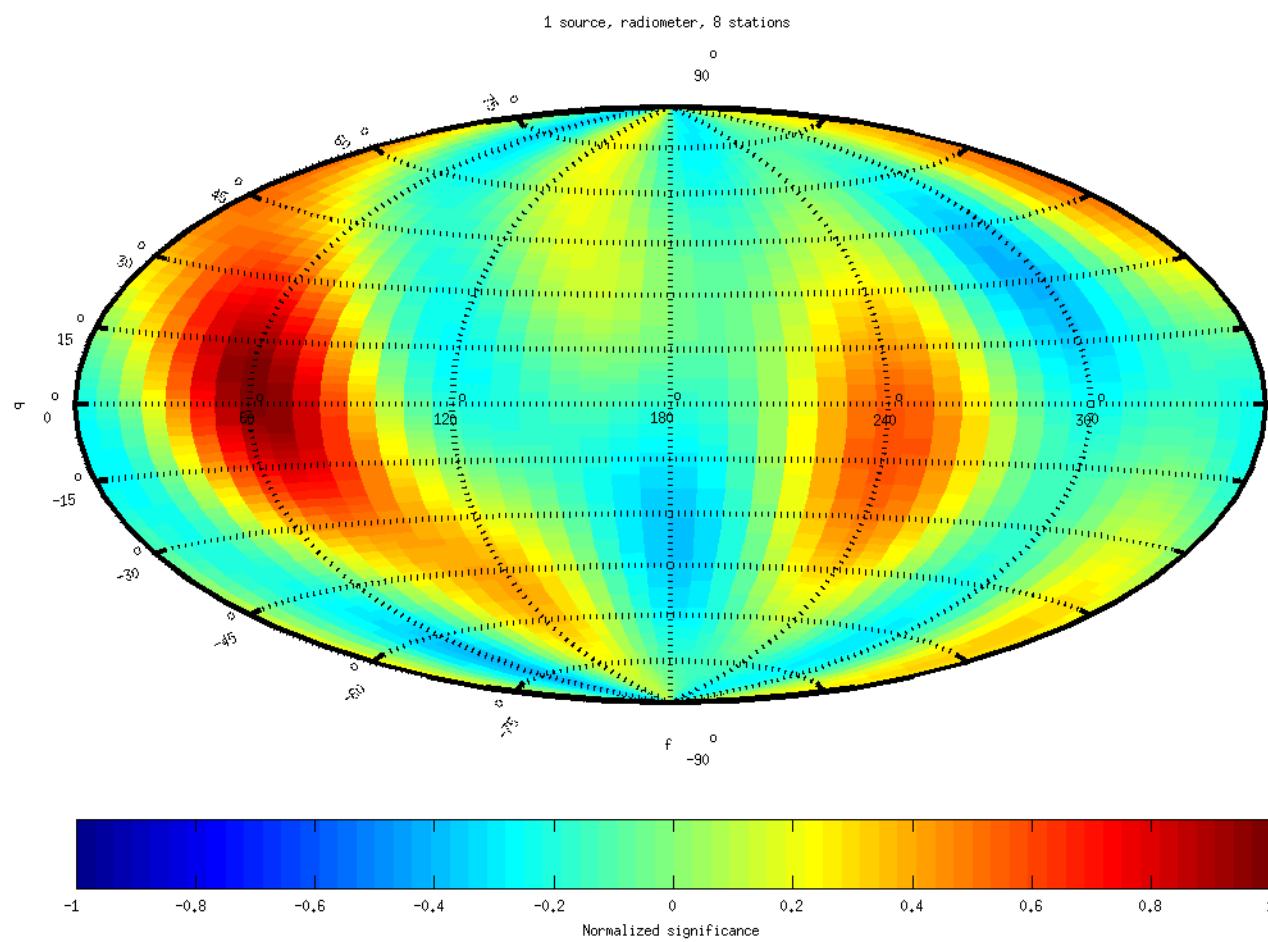
# Scale = 10



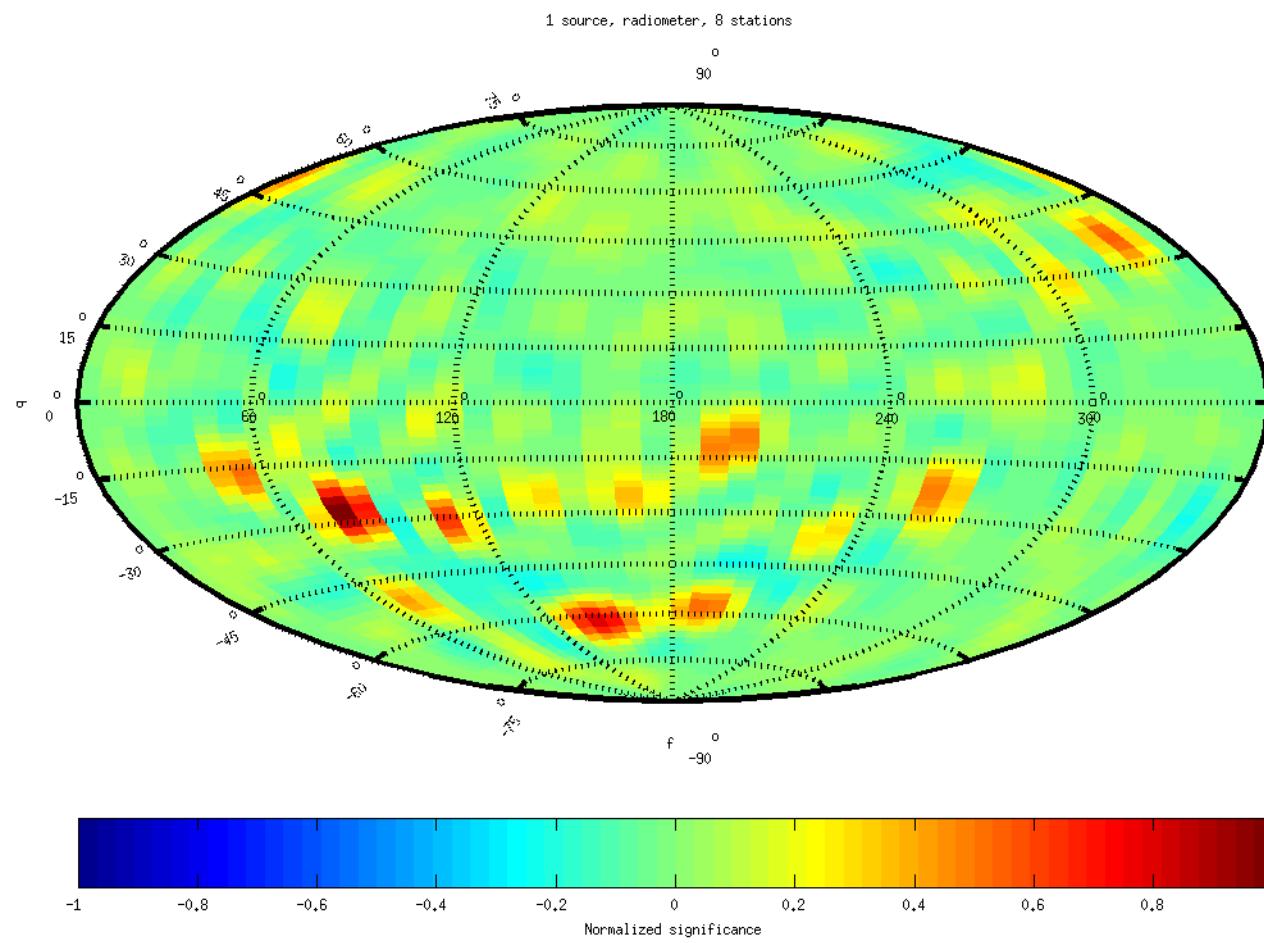
# Scale = 100



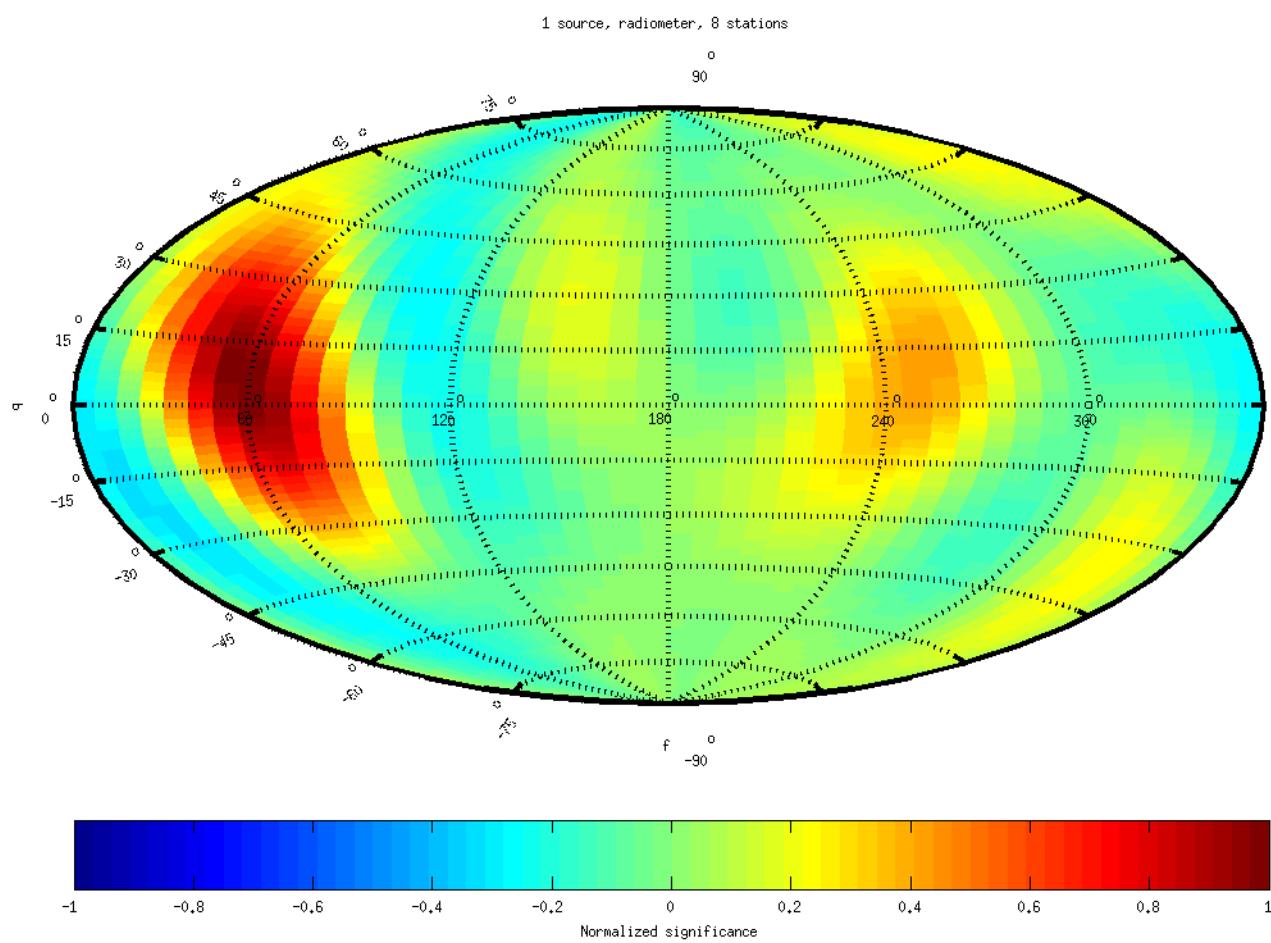
# Scale = 1000



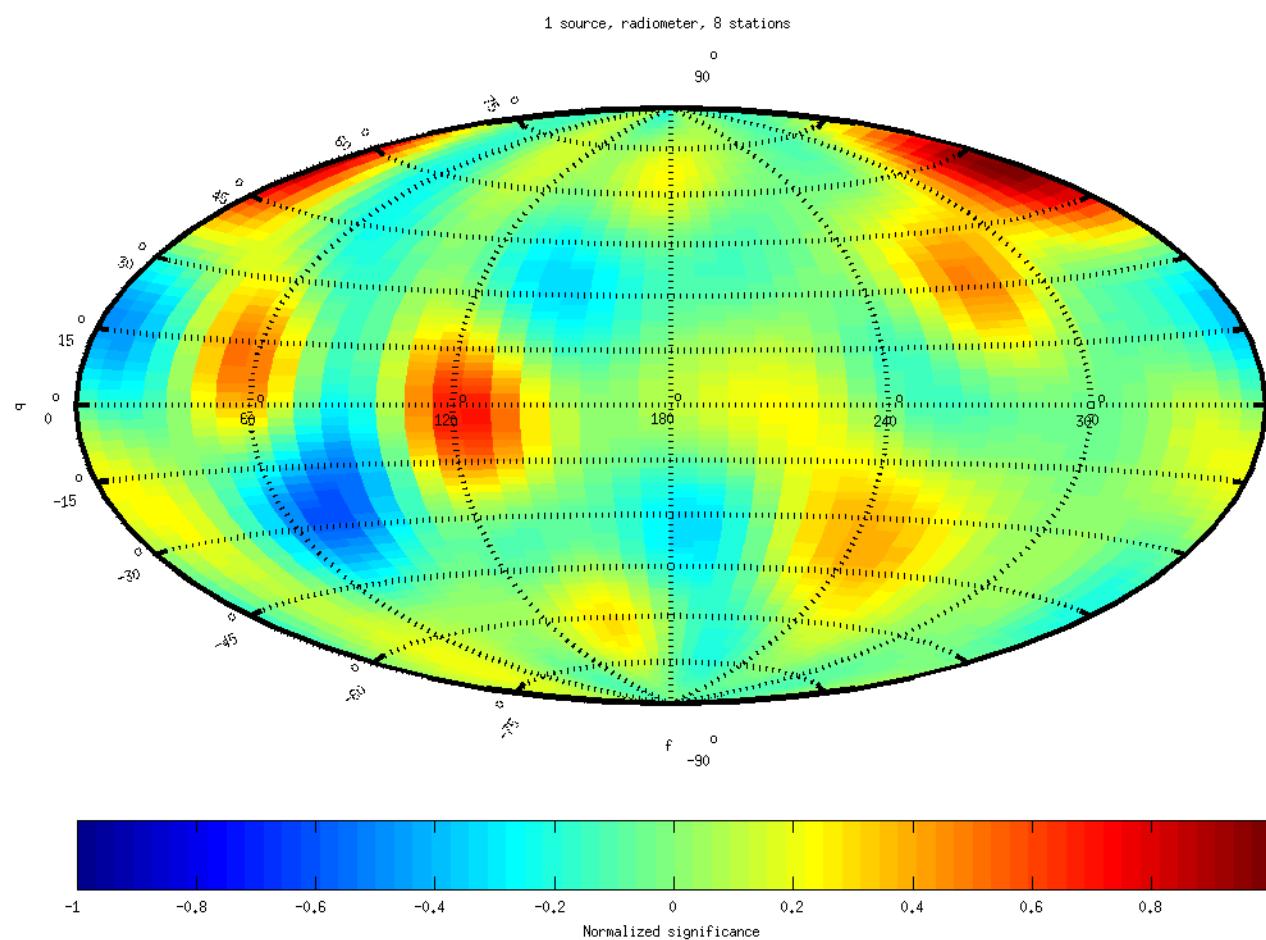
# Scale = 10,000



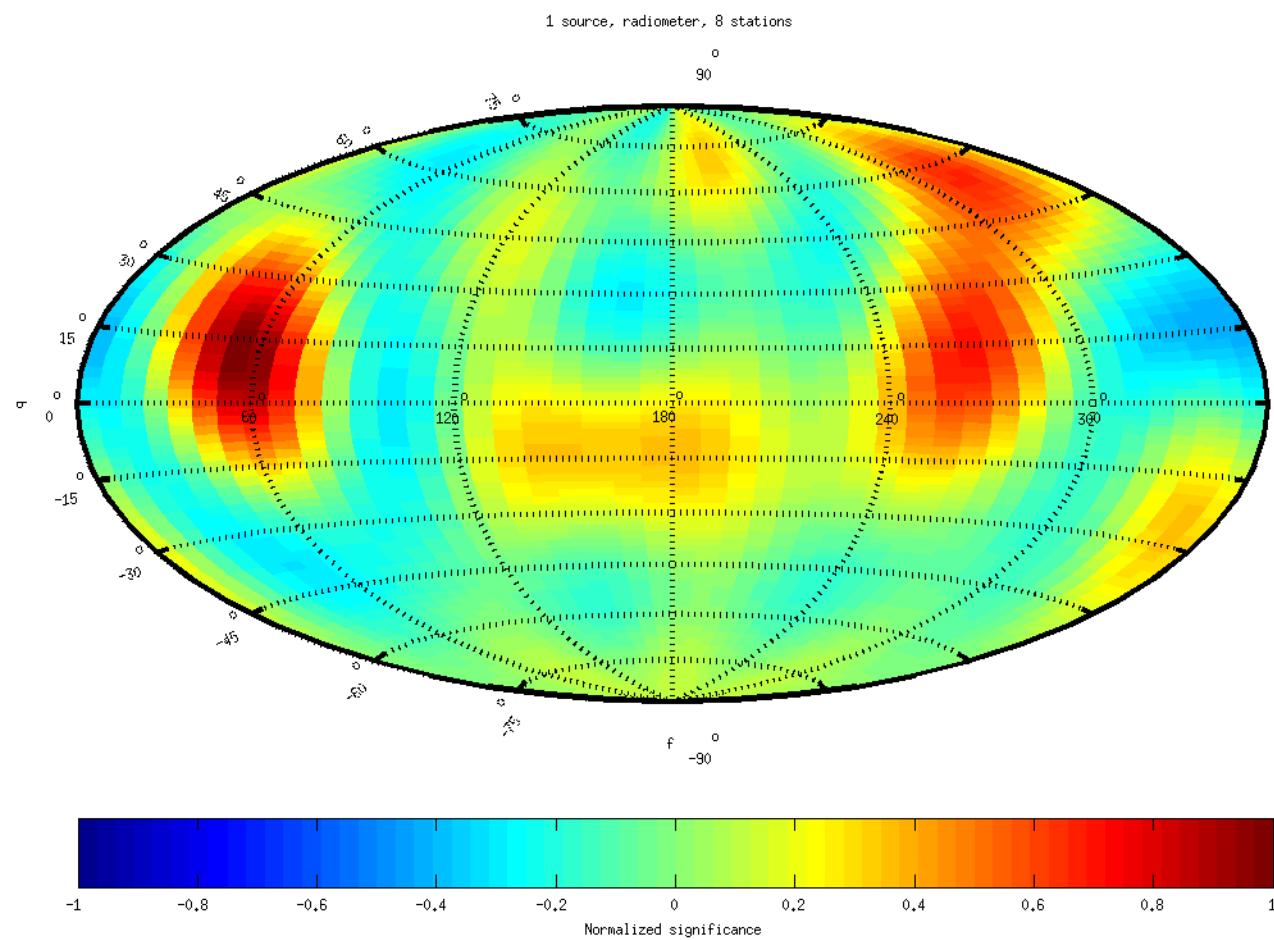
# Scale = 1500



# Scale = 3000



# Scale = 2000



# Detector Location Testing

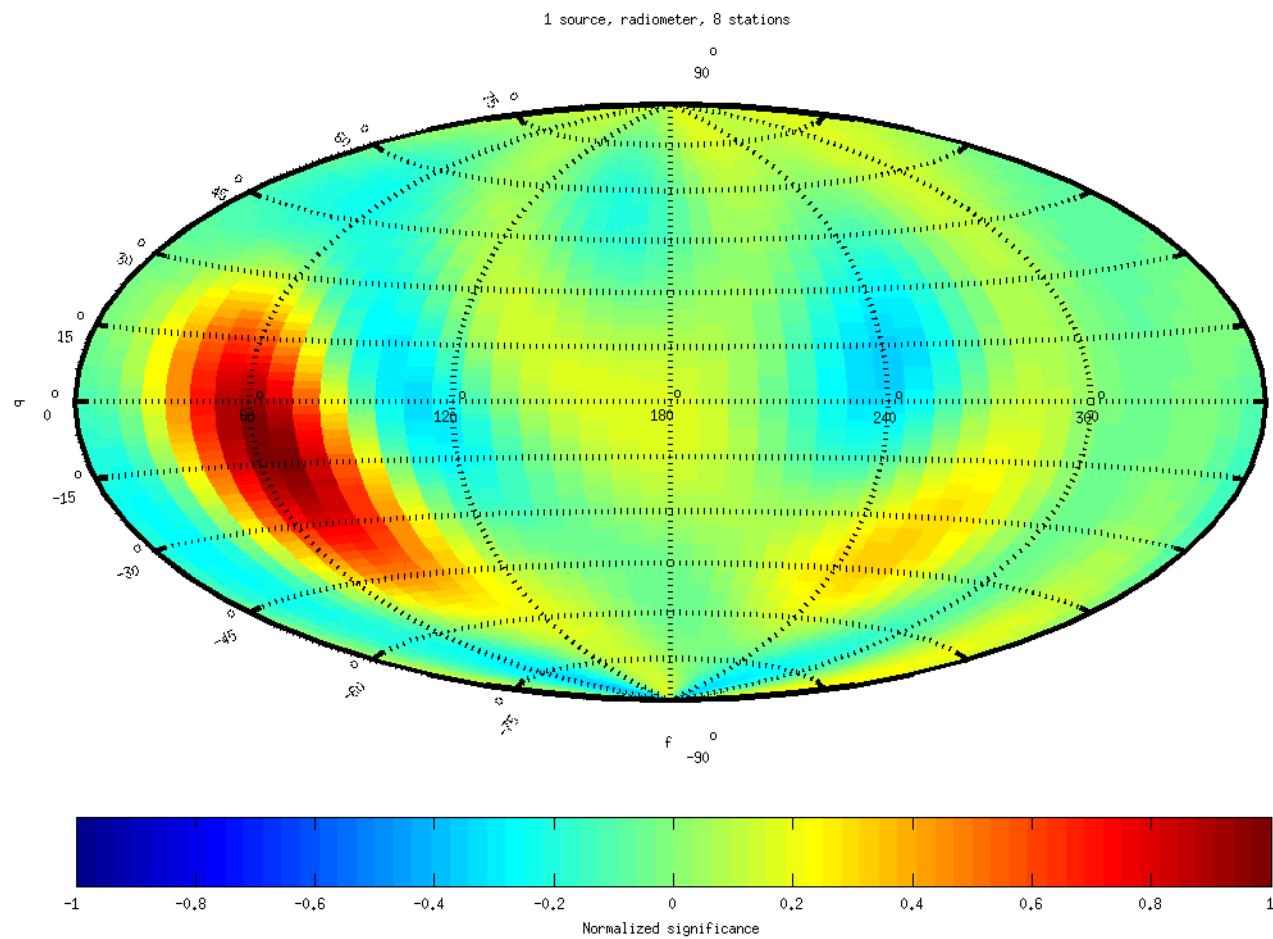
□ In this section, the detectors are randomly placed in a box of size 2,000 m. For constant parameters we have:

- number of detectors = 8
- phi = 90
- theta = 60
- psi = 45
- monochromatic source of freq = 1
- amp = 10

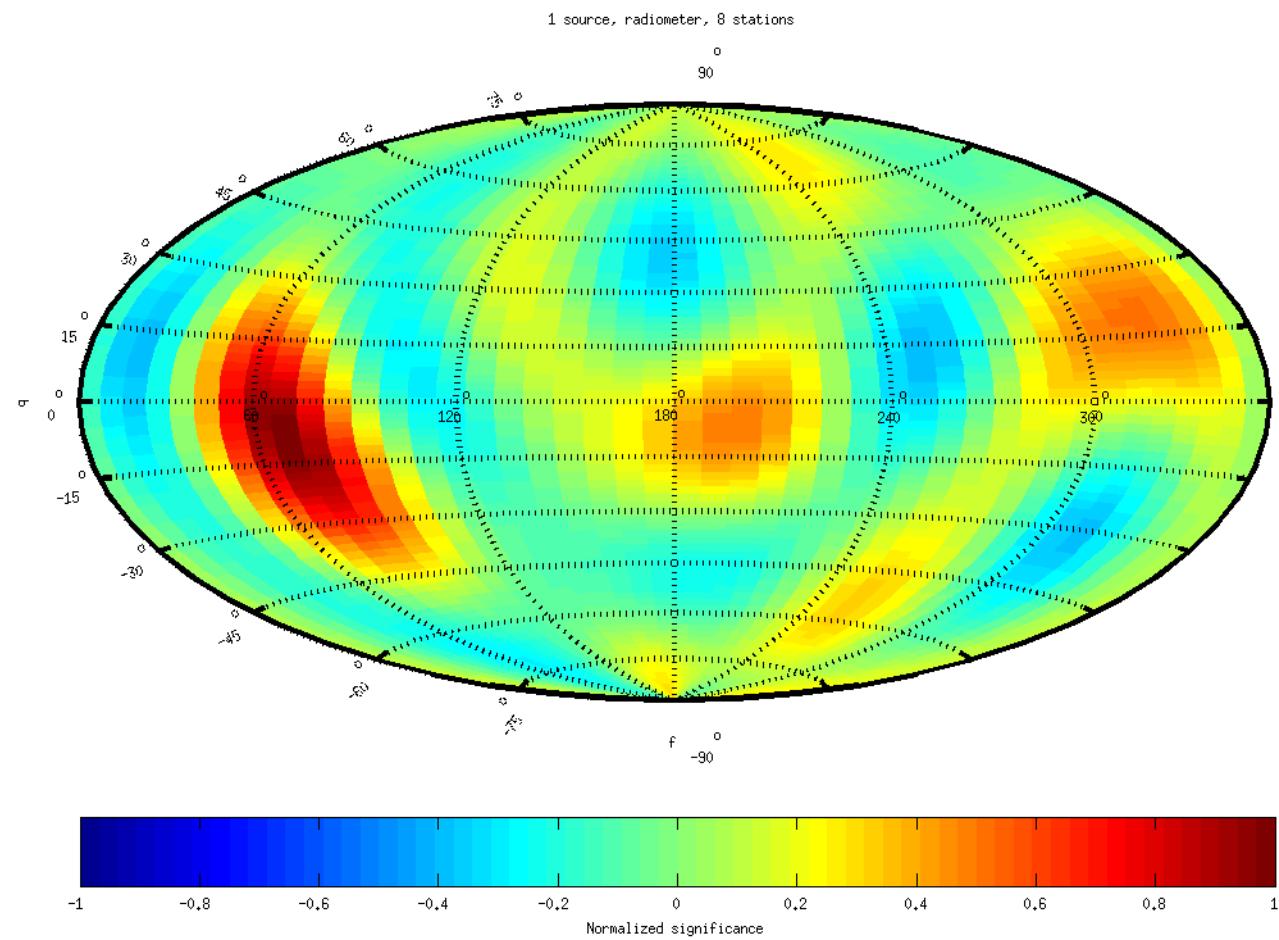
□ \*\*\*\*In the following slide, detloc should be multiplied by 1,000

<input type="checkbox"/> Stest9: detloc =	<input type="checkbox"/> Stest11: detloc =	<input type="checkbox"/> Stest13: detloc =
1.3891	1.1340	1.3470
1.0108		1.8817
1.8639	1.4234	0.3570
0.9480		1.8670
0.4711	0.4871	1.3644
1.2928		0.5589
1.6871	0.0004	0.3577
1.7131		0.0461
0.6728	0.0834	1.1381
1.5129		1.7794
**0.1714	should be multiplied by 1000	1.3475
1.7110		0.6999
0.0302	0.6237	1.8973
		1.0806
		<input type="checkbox"/> 0.2354
		0.7088

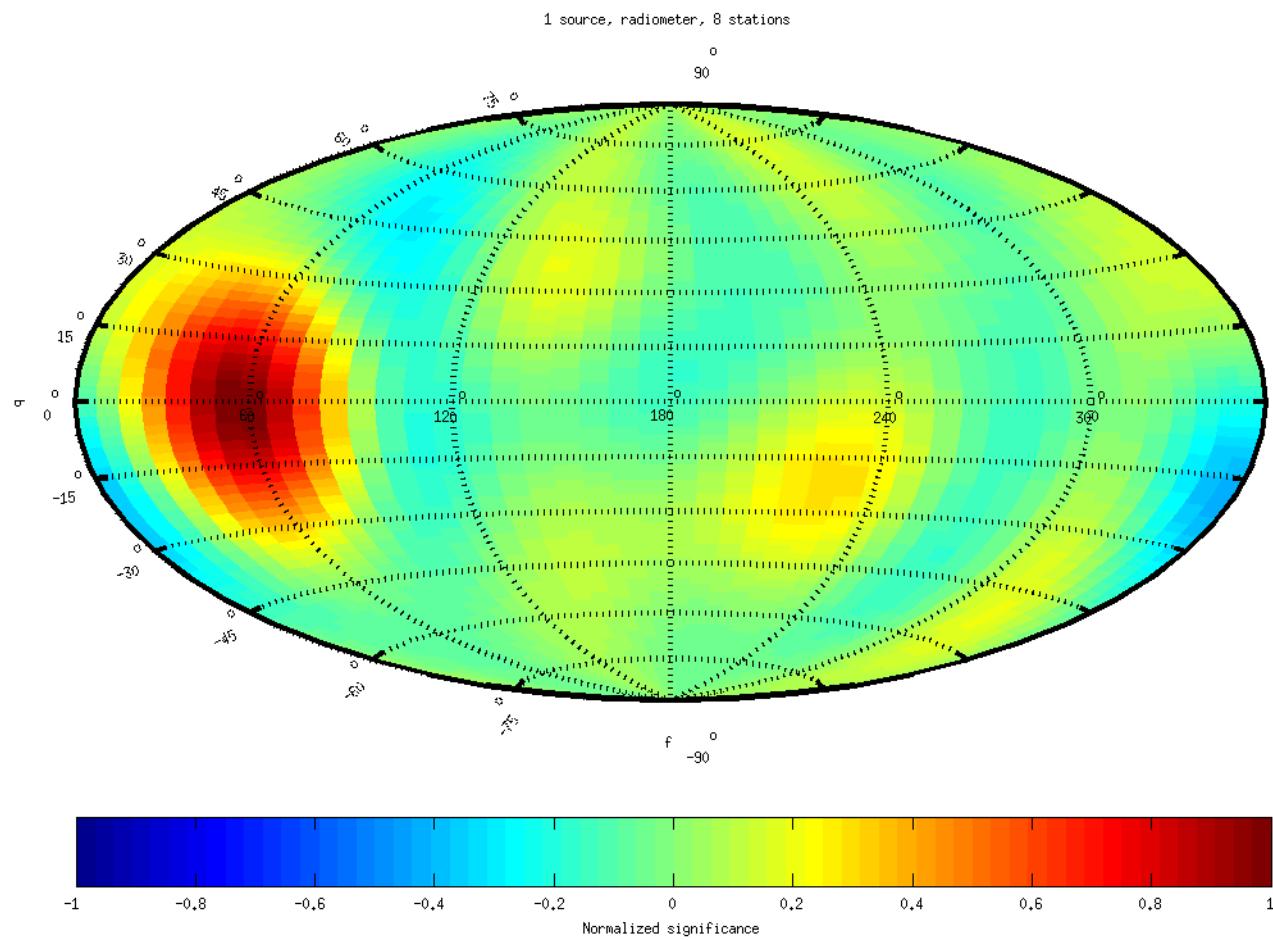
# stest9



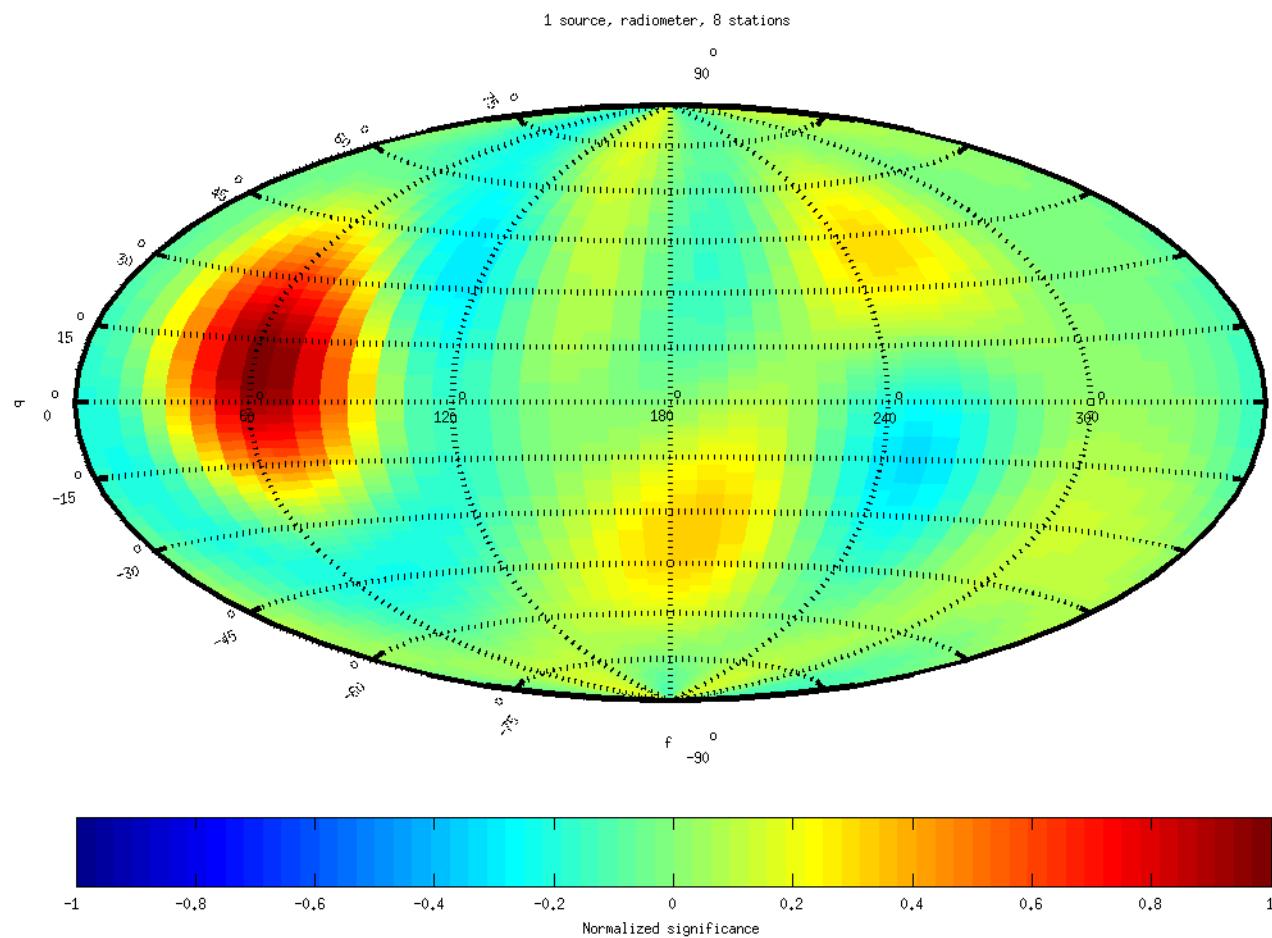
# stest10



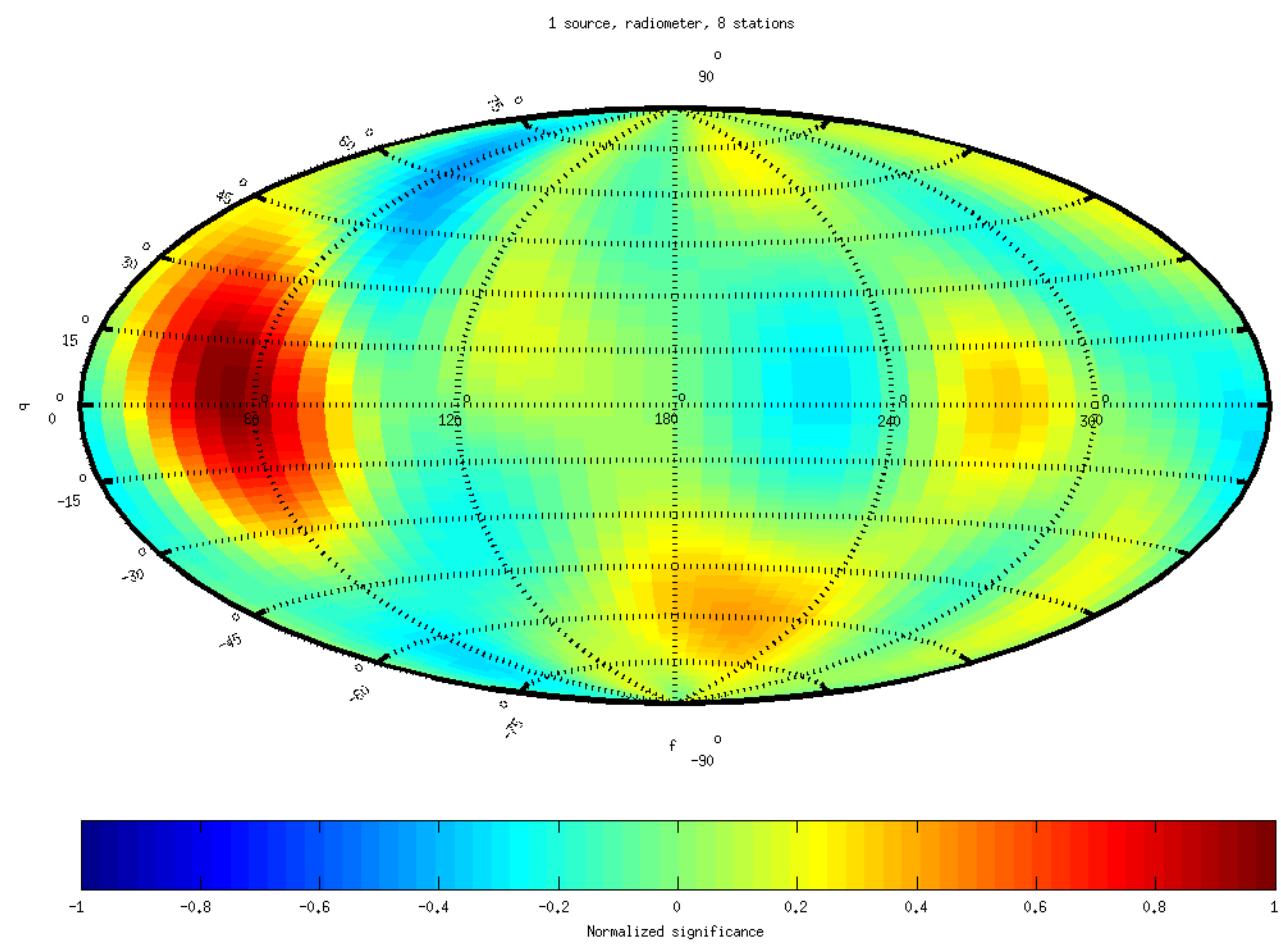
# stest11



# stest12



# stest13



# Source Location Testing

□ Now the source location is varied. The Constant Parameters are:

□ number of detectors = 8

□ psi = 45

□ monochromatic source of freq = 1

□ amp = 10

□ detloc =

□ 1.3470    1.5577    1.8817

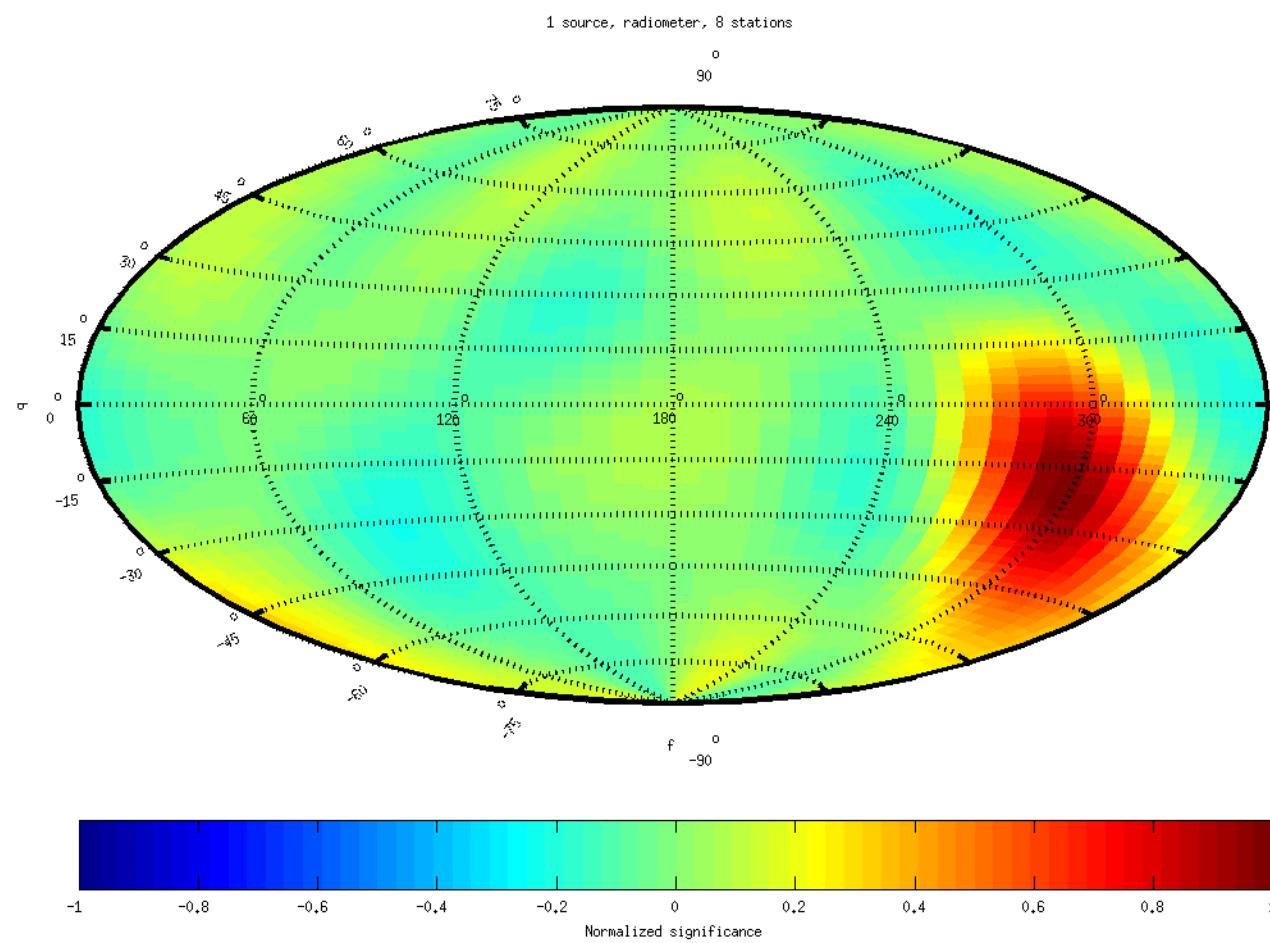
□ 0.3570    0.9226    1.8670

□ 1.3644    0.9146    0.5589

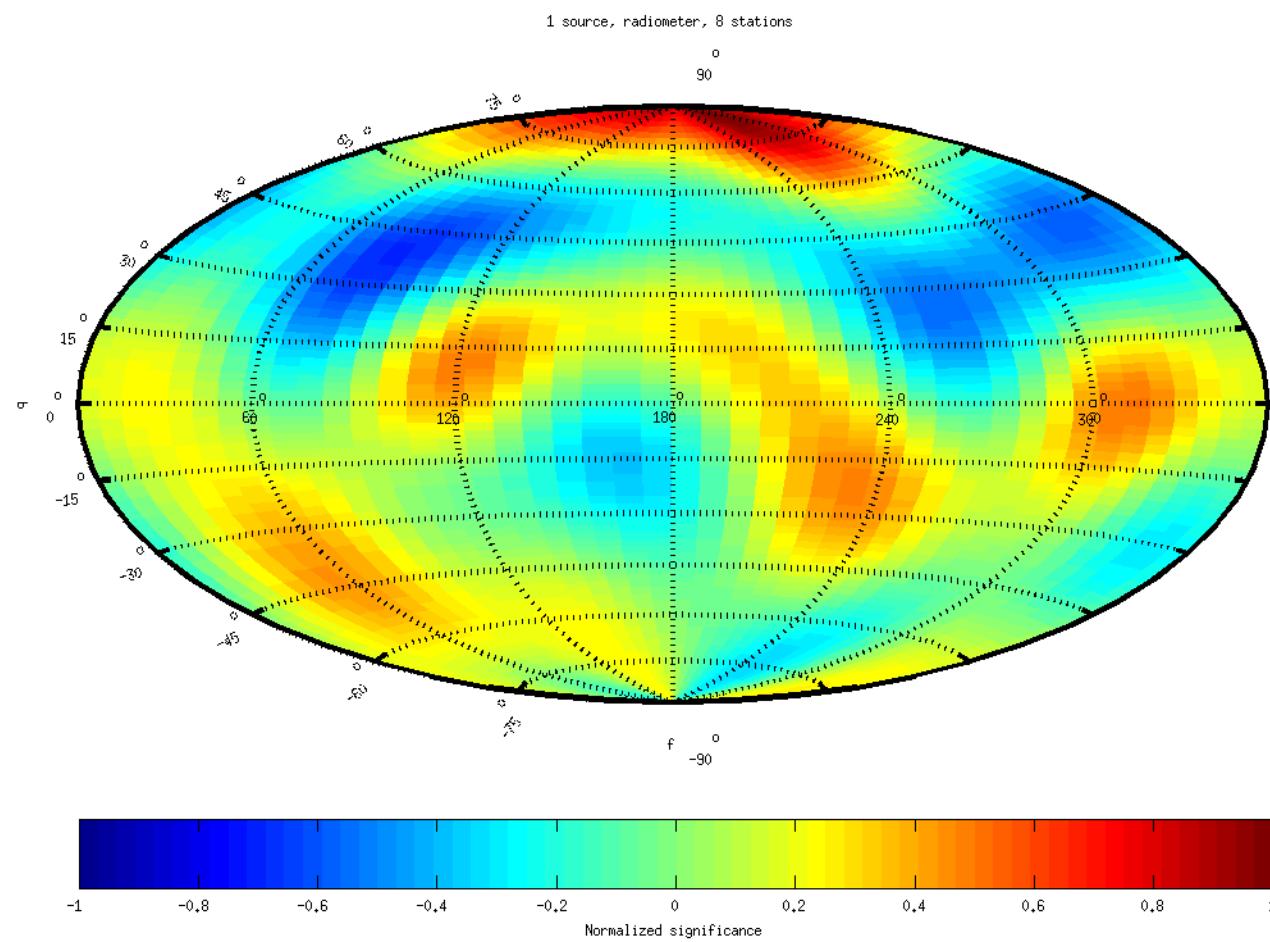
□ 0.3577    1.2471    0.0461

□ 1.1381    0.9367    1.7794

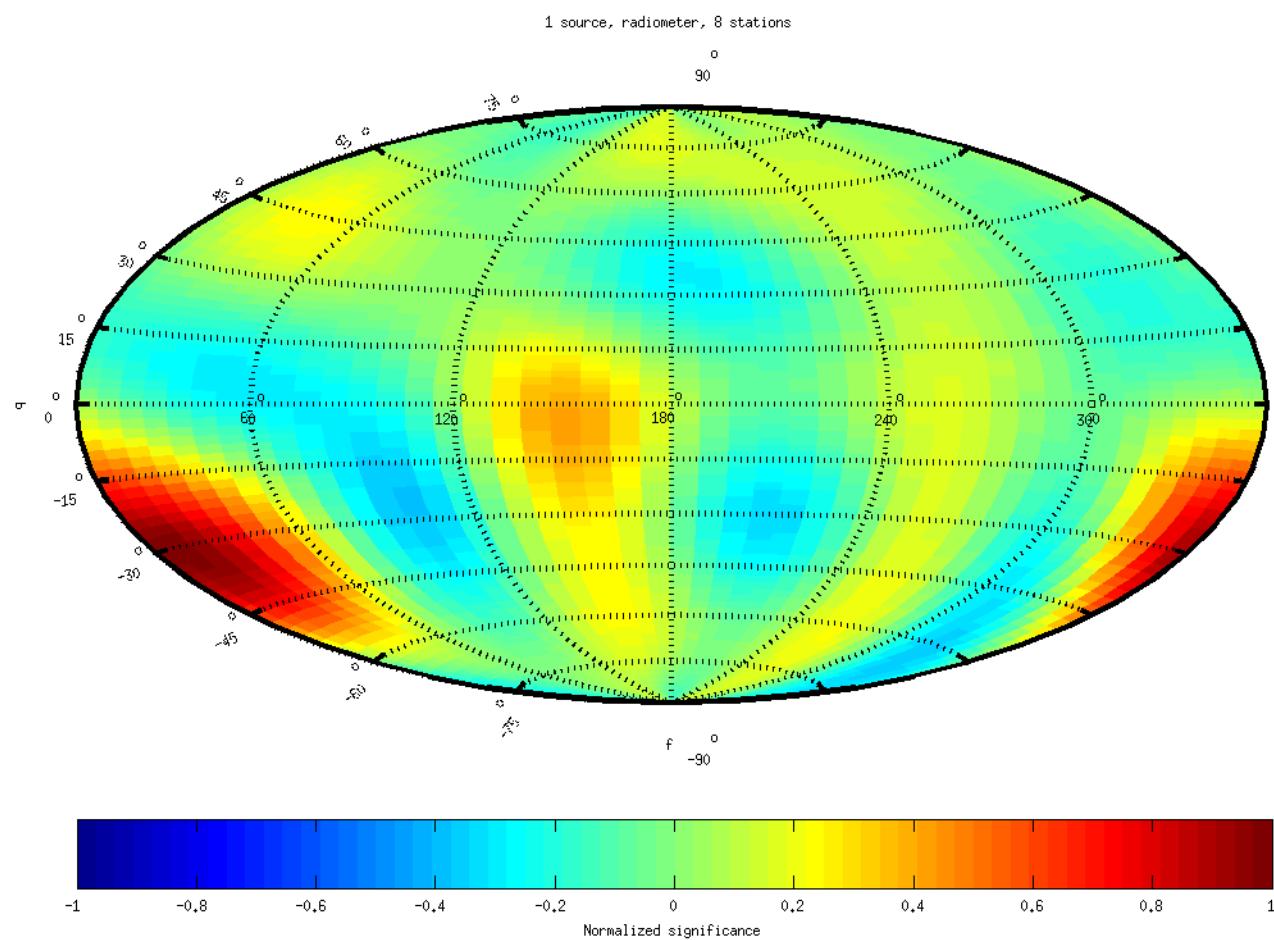
Stest 14: theta = 107.4981 phi =291.9691



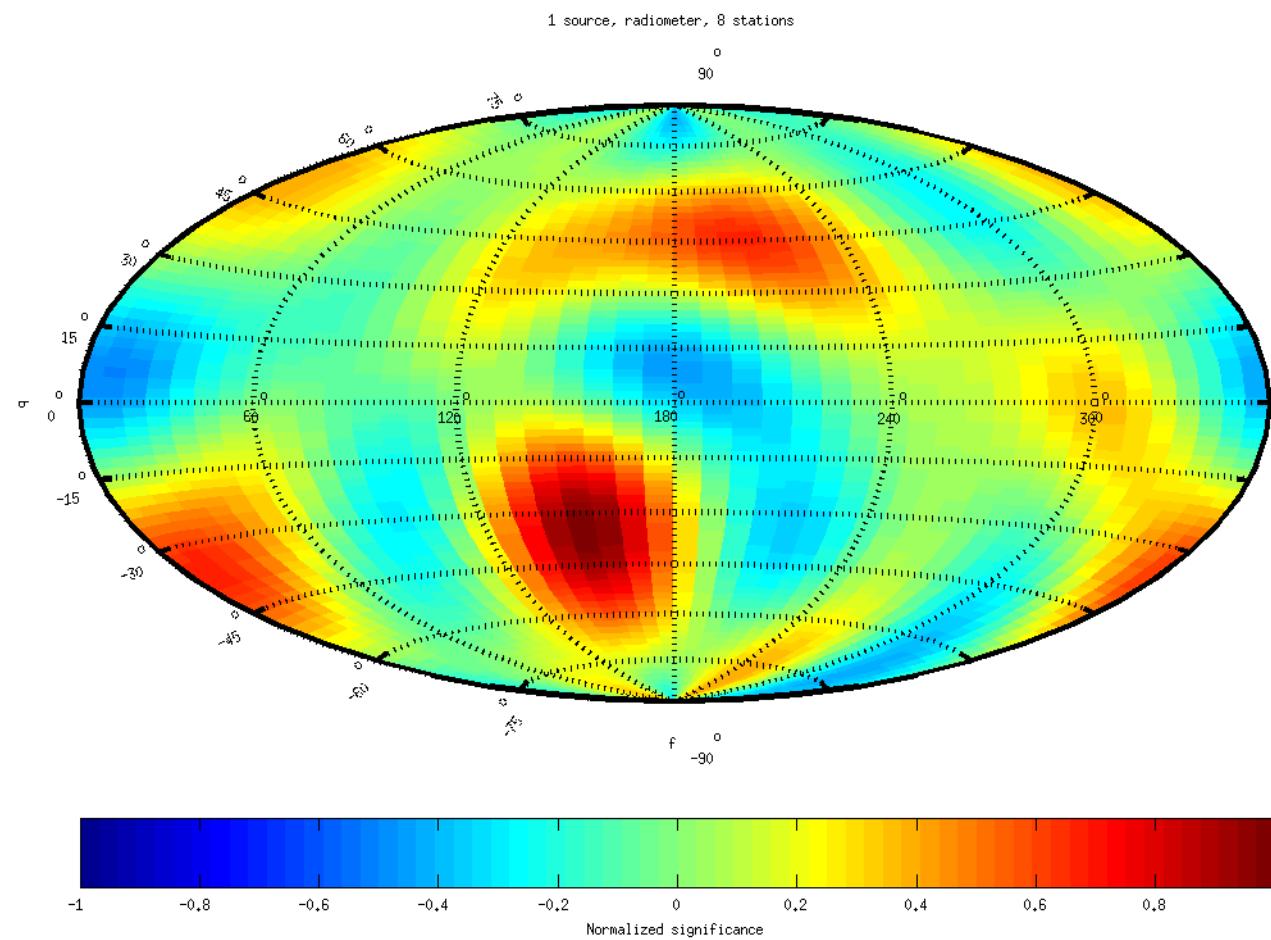
Stest 15: theta = 6.1805 phi = 178.6507



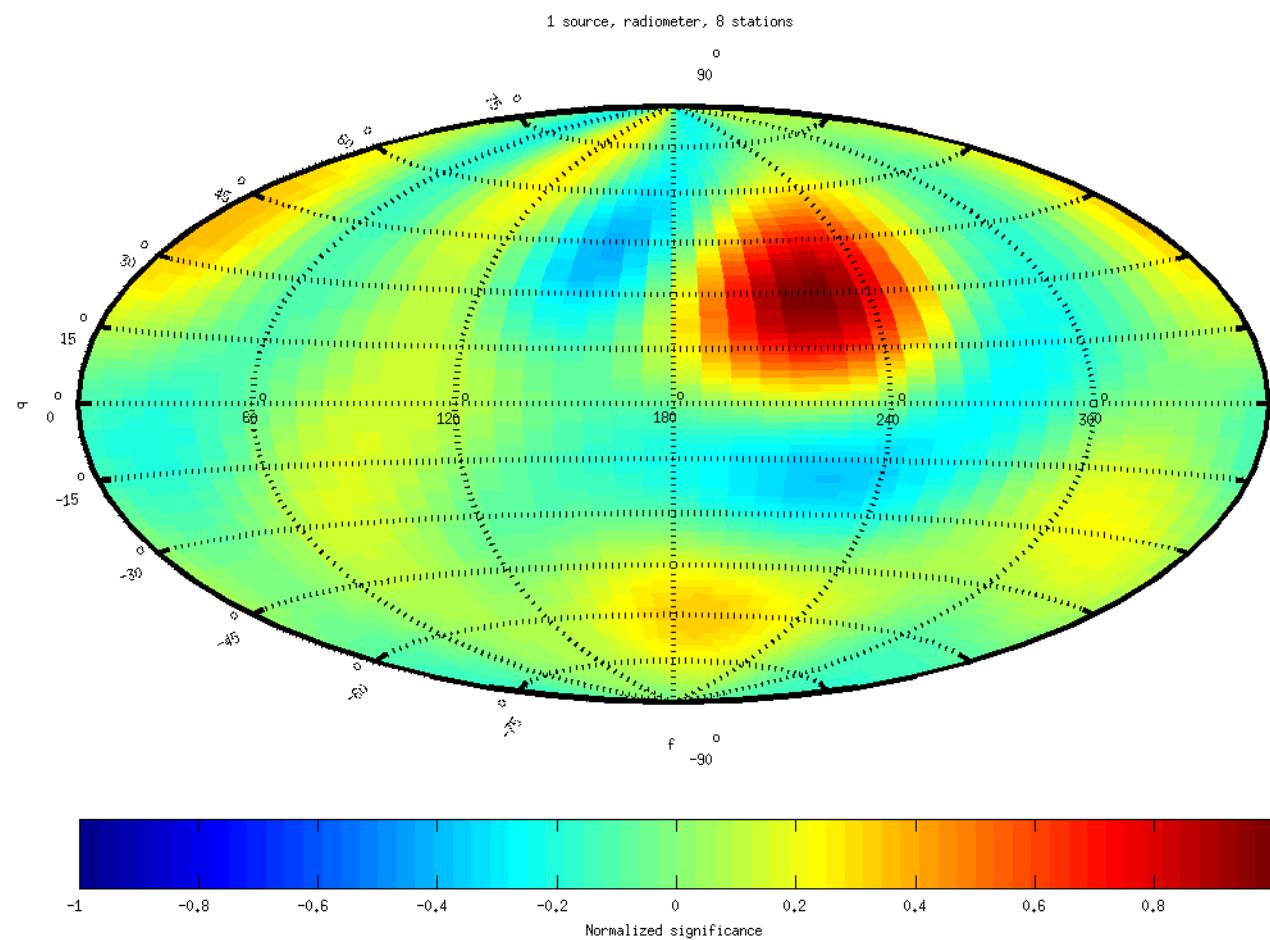
**Stest16: theta = 120.5378 phi = 347.6499**



Stest17: theta = 134.4162 phi = 170.1877



# Stest18: theta = 53.1288 phi = 186.7565

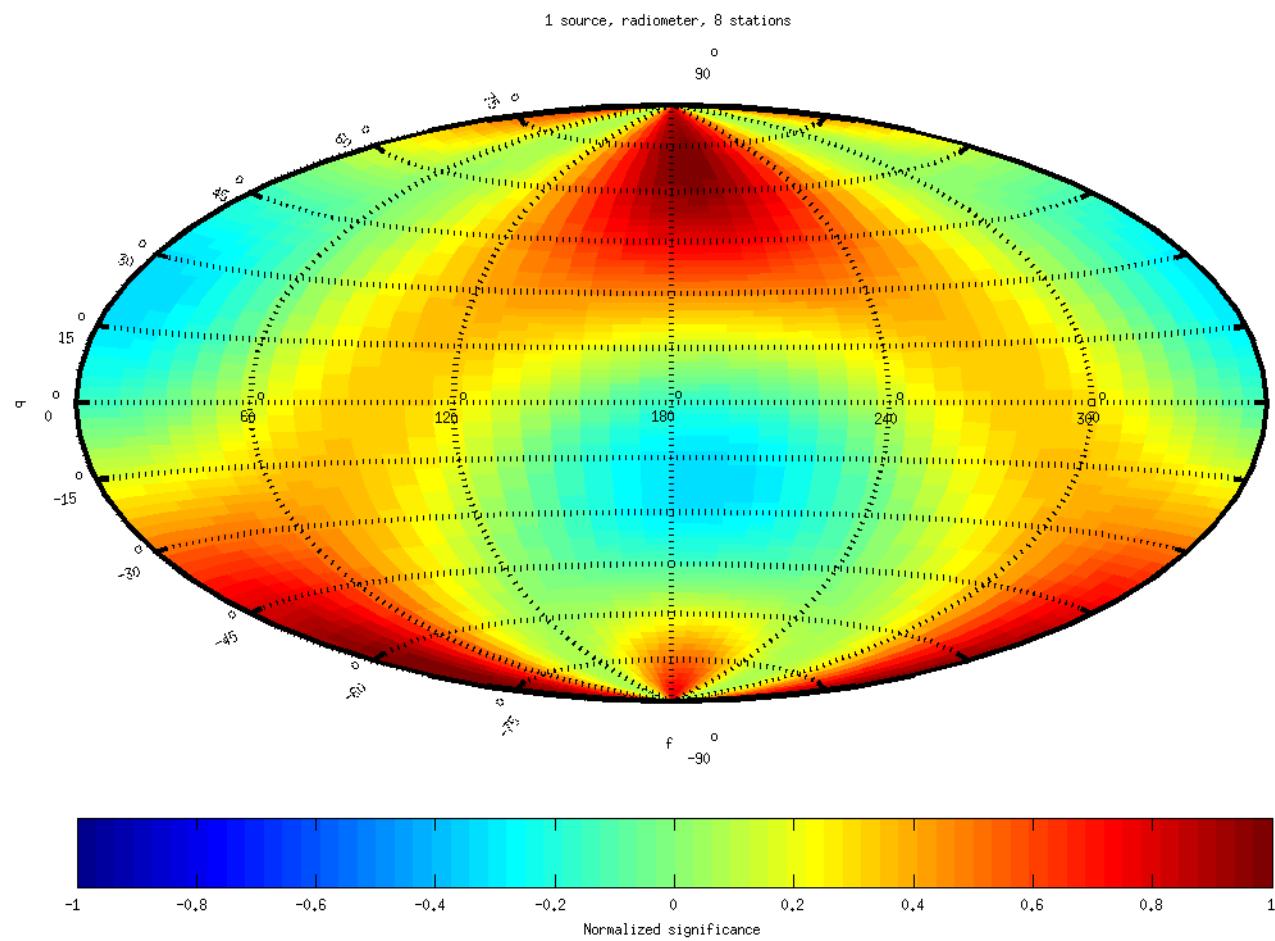


# Frequency Dependence Testing

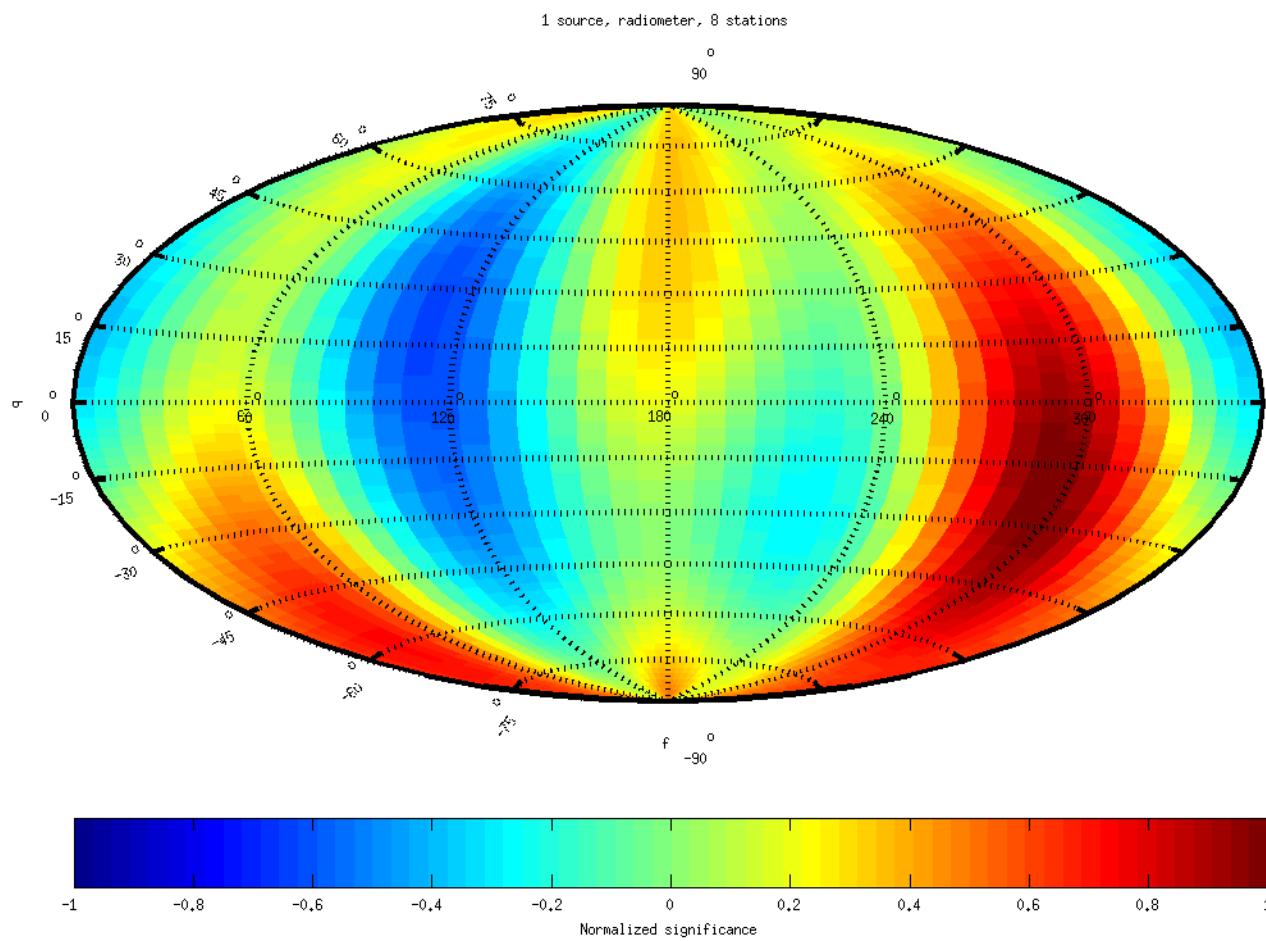
- In this section, frequency dependence is tested.  
The constant parameters are:

- number of detectors = 8
- theta = 107.4981
- phi = 291.9691
- psi = 45
- monochromatic source
- amp = 10
- detloc =
  - 1.3470    1.5577    1.8817
  - 0.3570    0.9226    1.8670
  - 1.3644    0.9146    0.5589

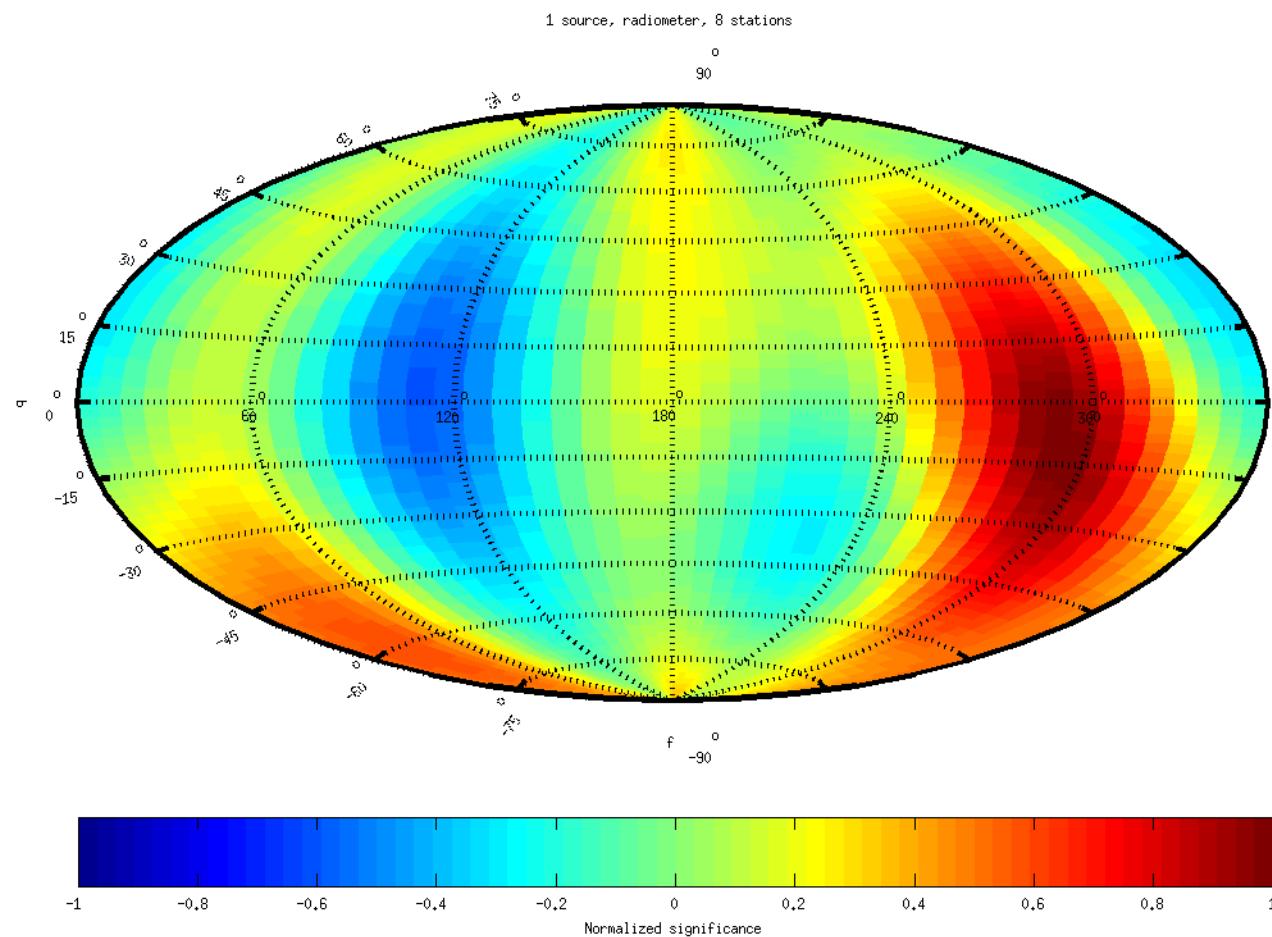
# Stest 19: freq = .001



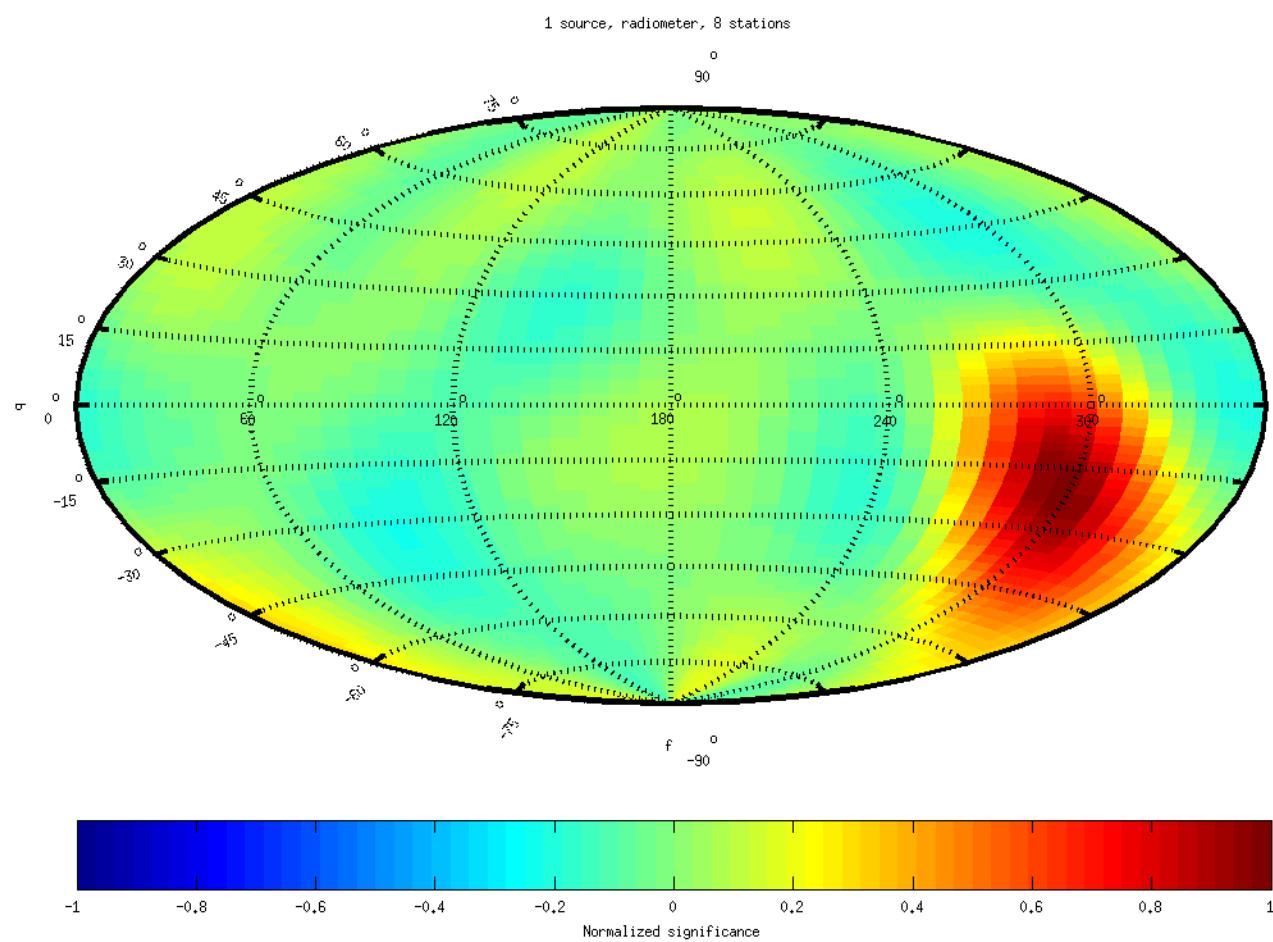
# Stest20: freq = .01



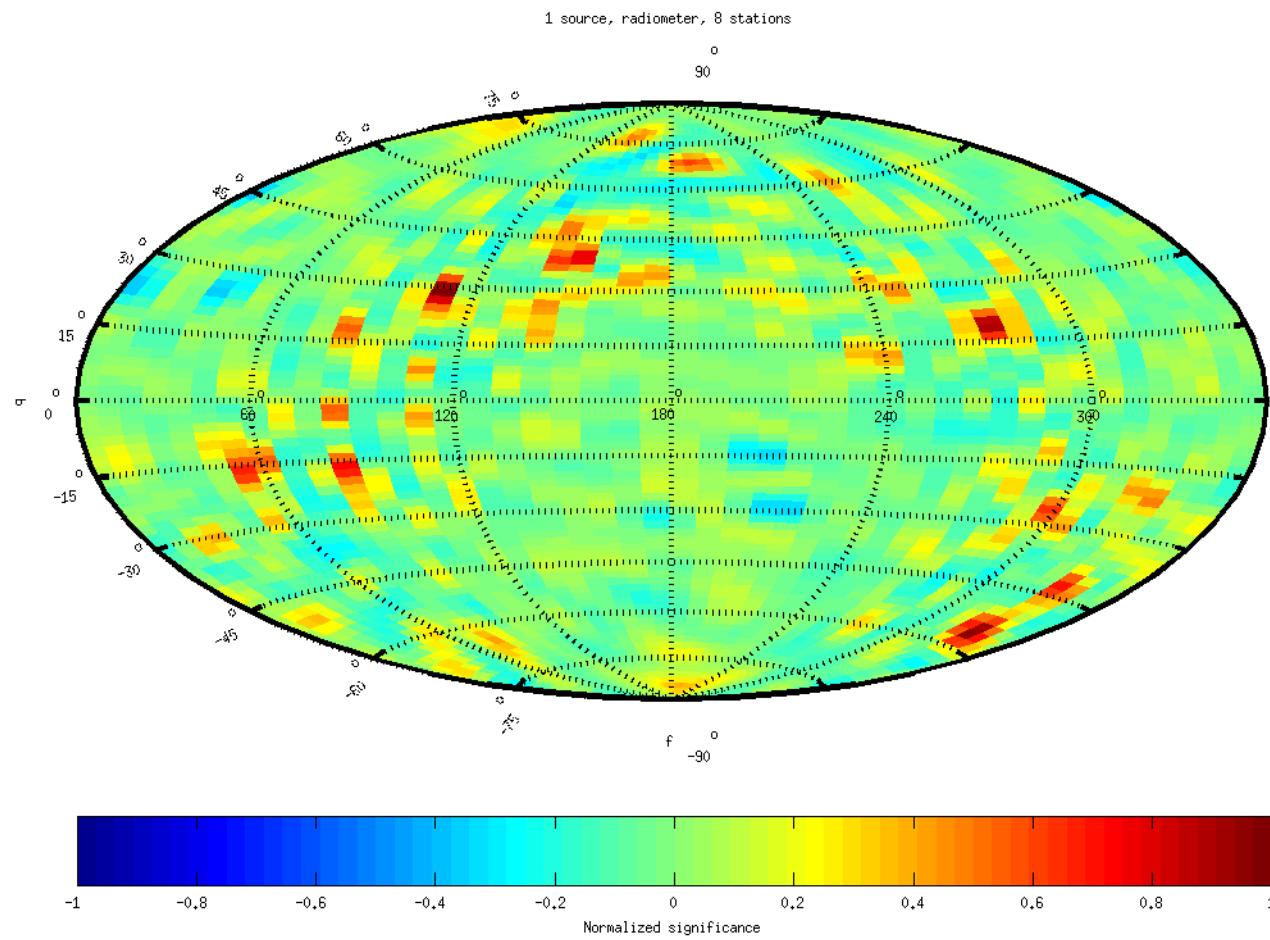
# Stest21: freq = .1



# Stest22: freq = 1



# Stest23: freq = 5

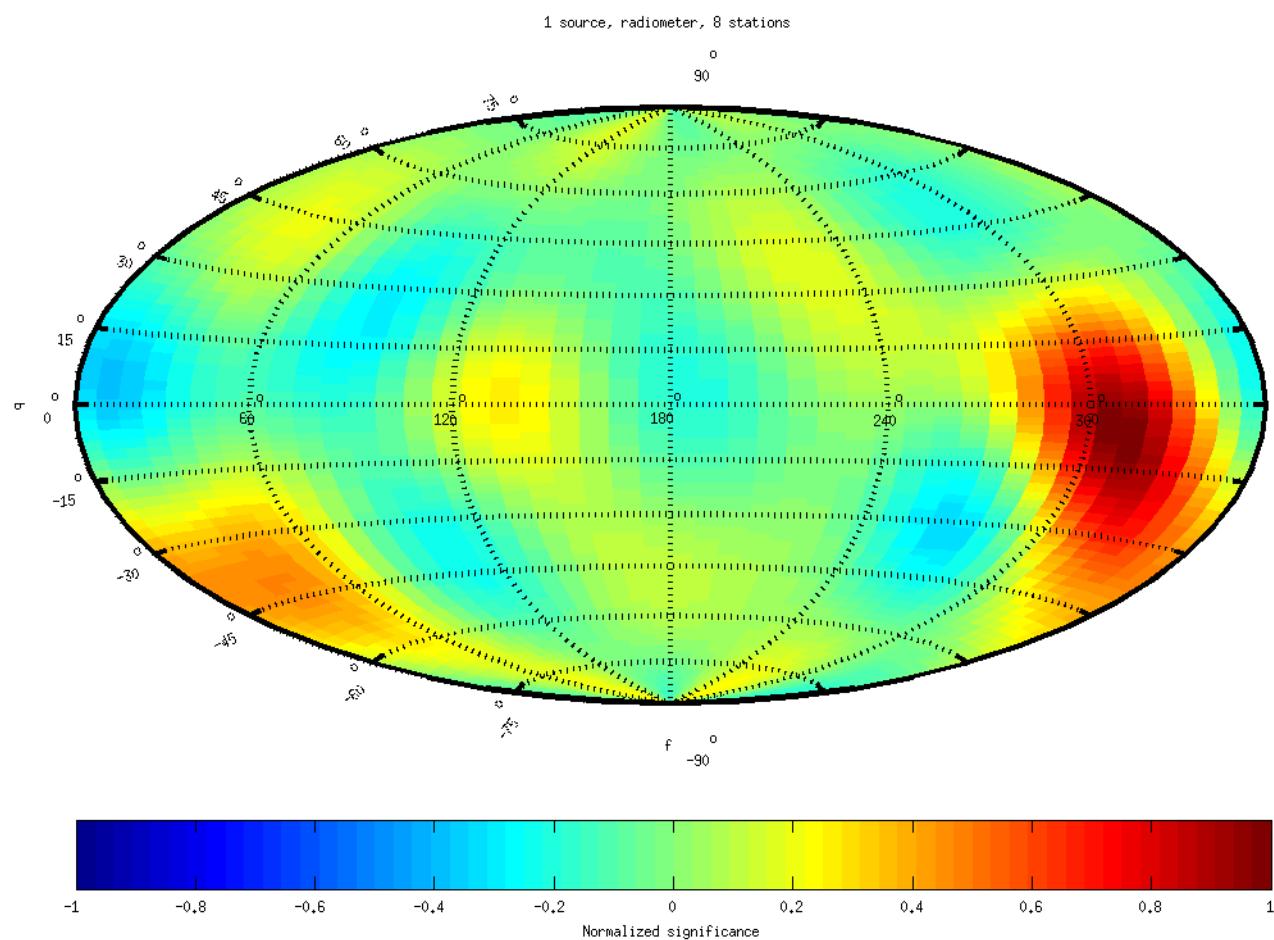


# Polarization Testing

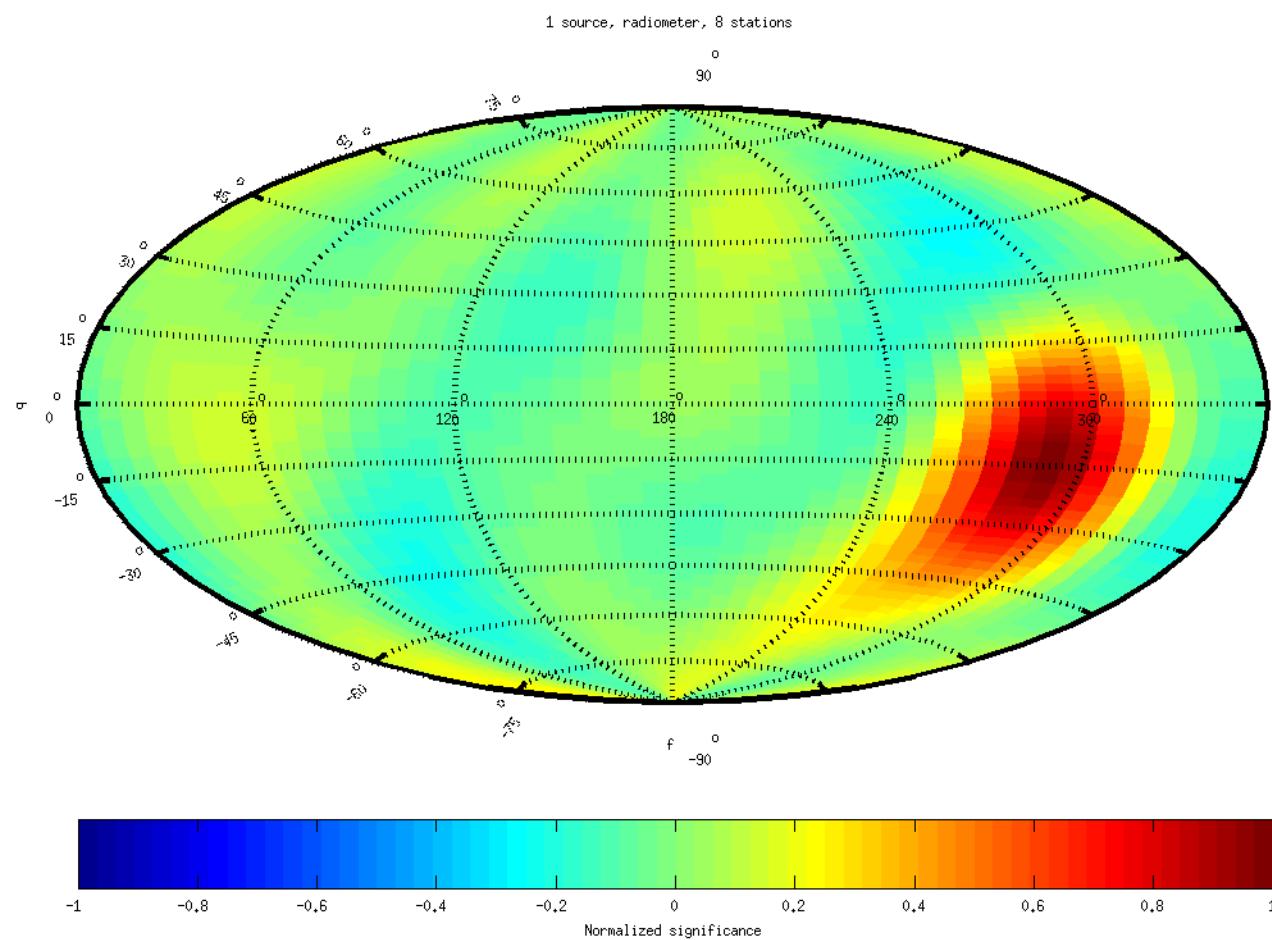
- In this section, dependence on polarization angle, psi, is tested. The constant parameters are as before, with a monochromatic source of frequency

1

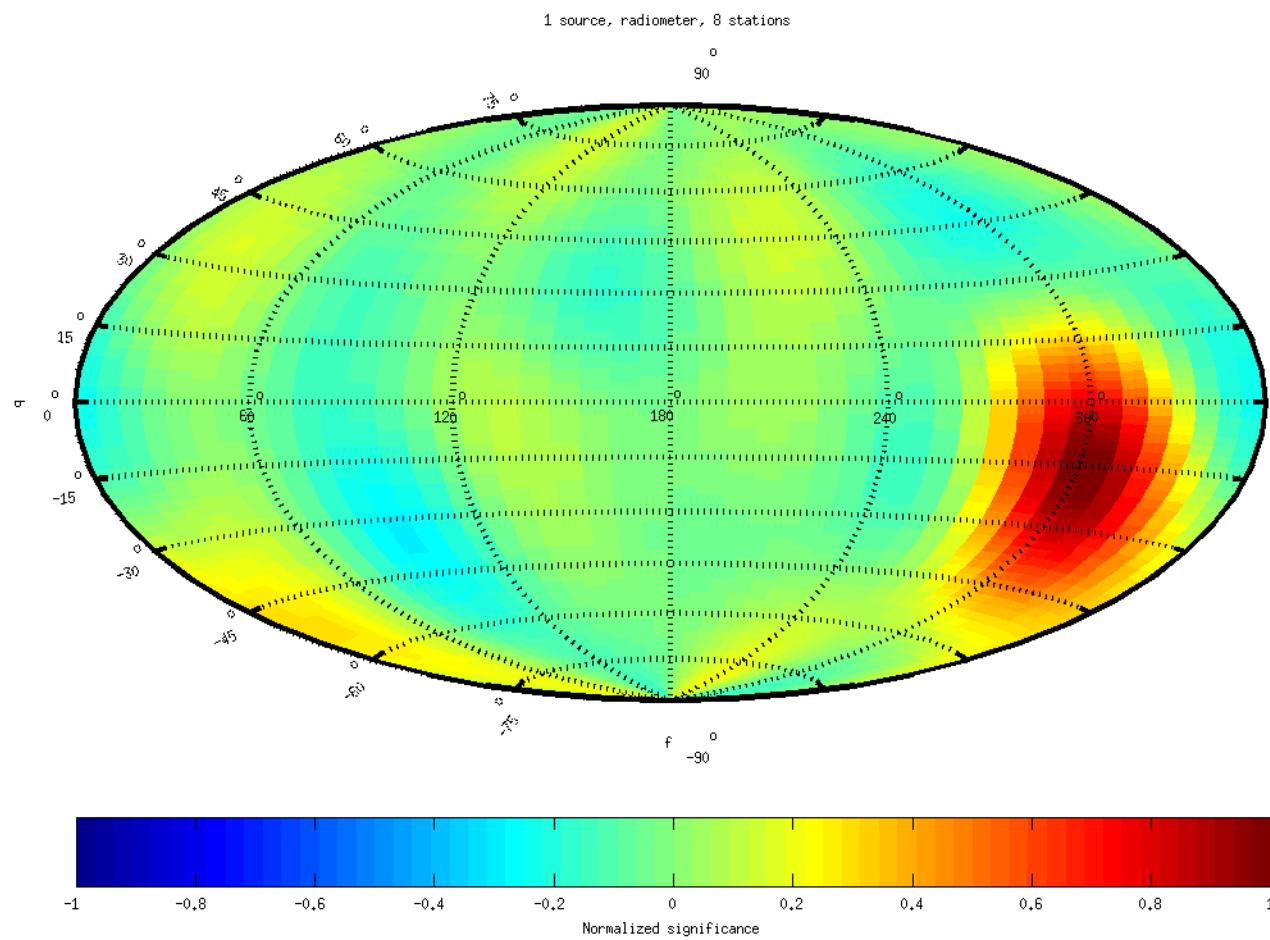
# Stest24: psi = 288.9824



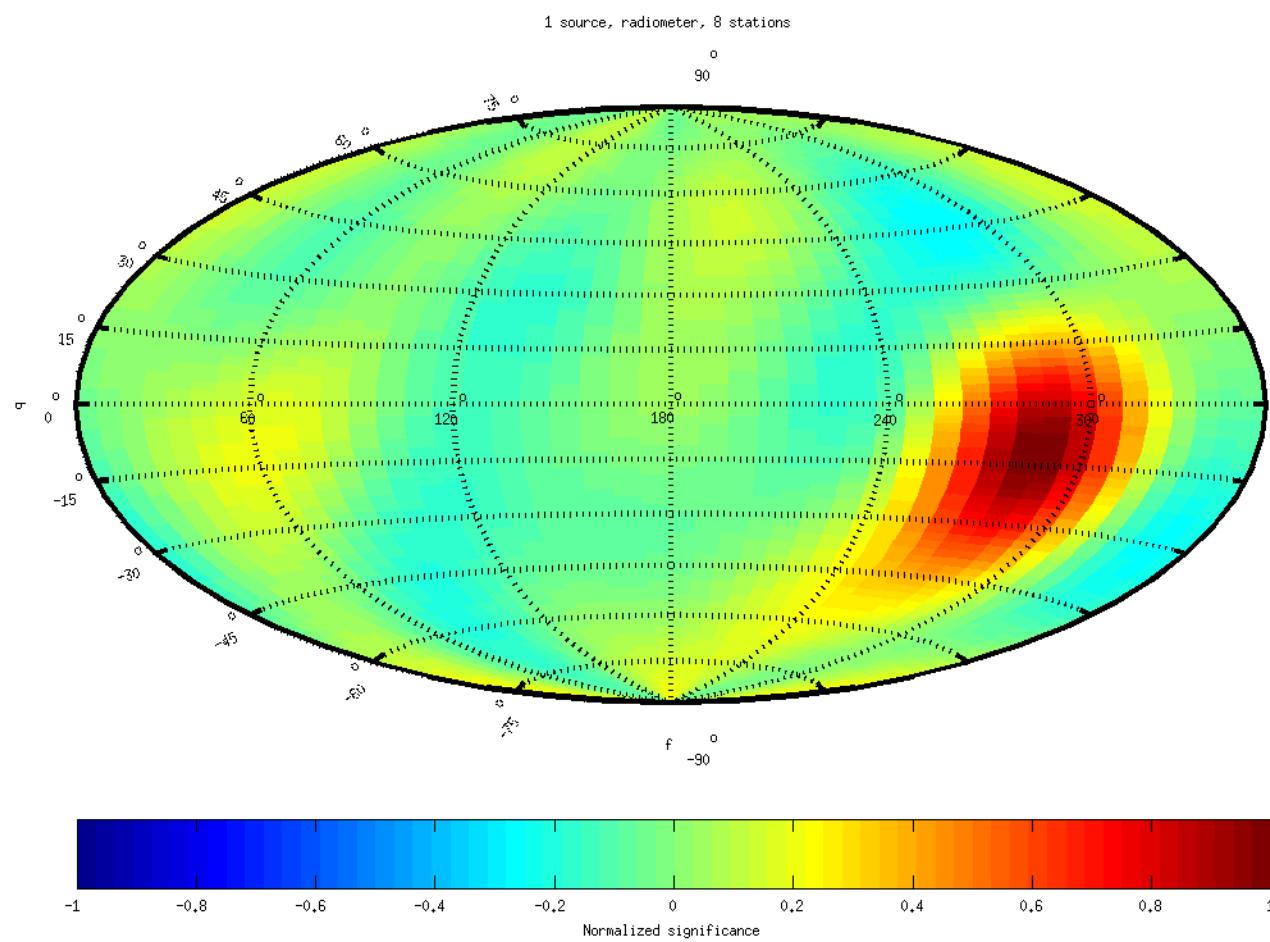
# Stest25: psi = 219.0981



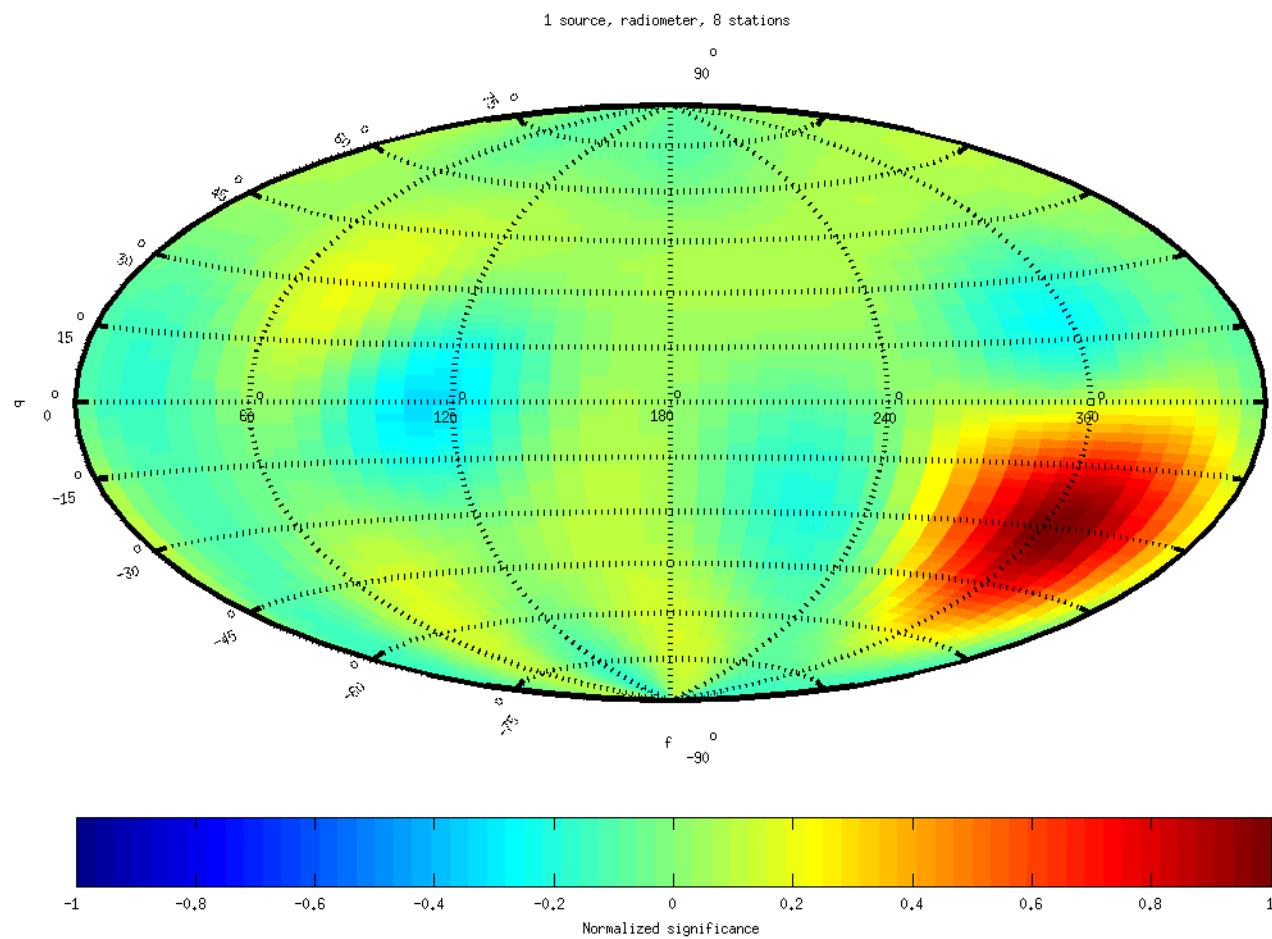
# Stest26: psi =341.2668



**Stest27: psi = 235.7961**



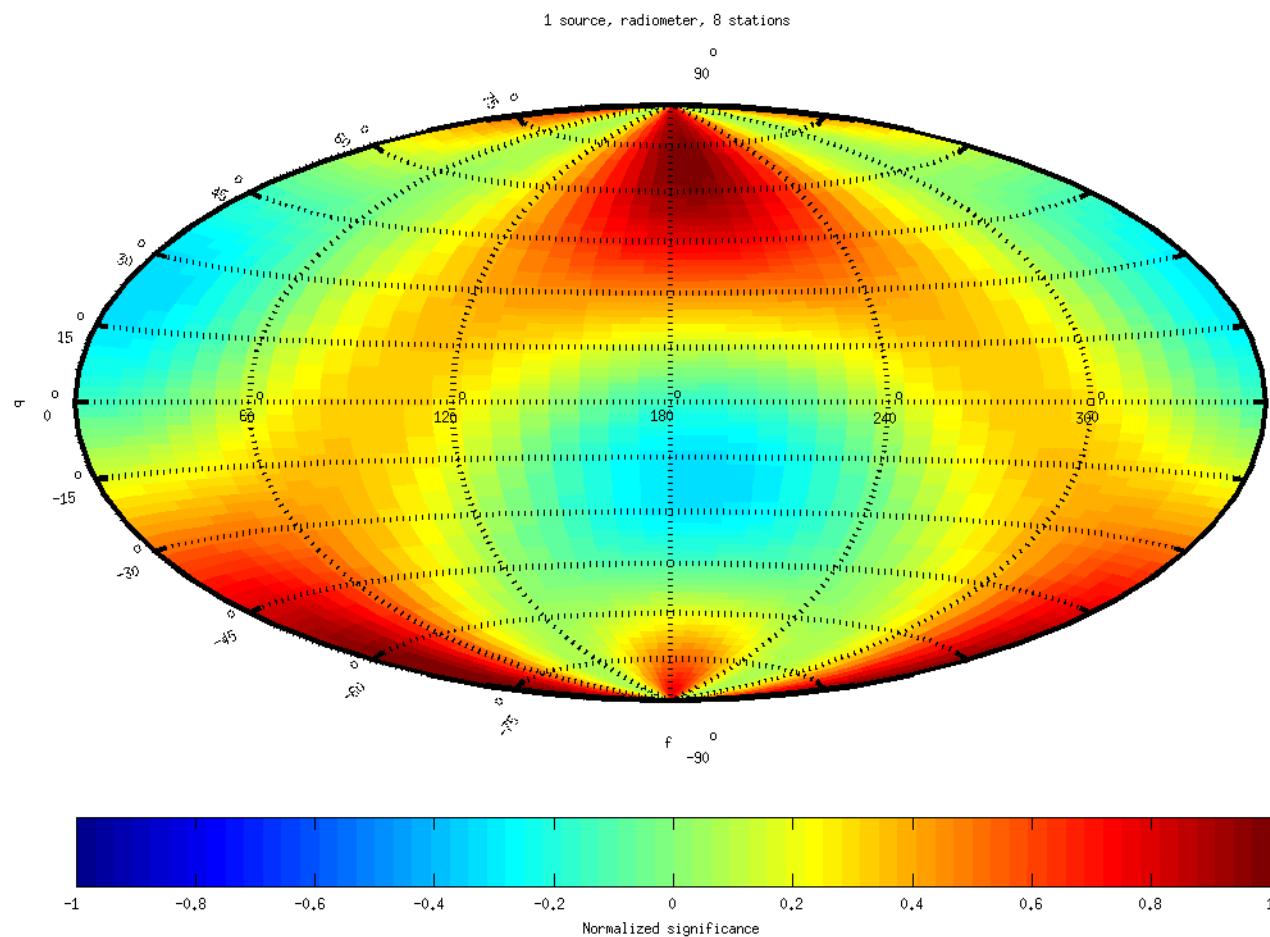
# Stest28: psi = 88.4760



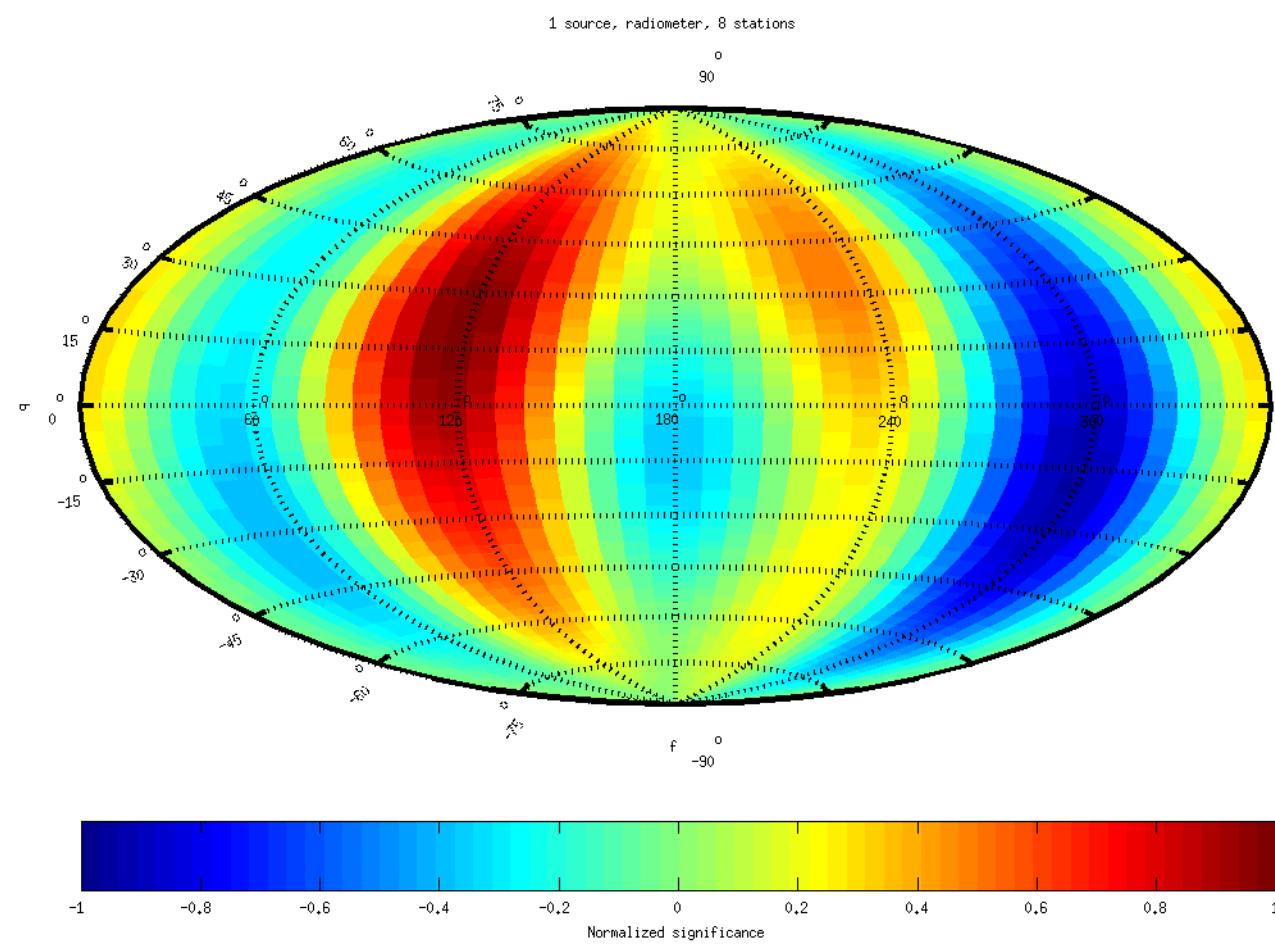
# Broadband Signal Testing

- In this section, the constant parameters are the same as before, except the signal is broadband rather than monochromatic, and psi is kept at 45 degrees.

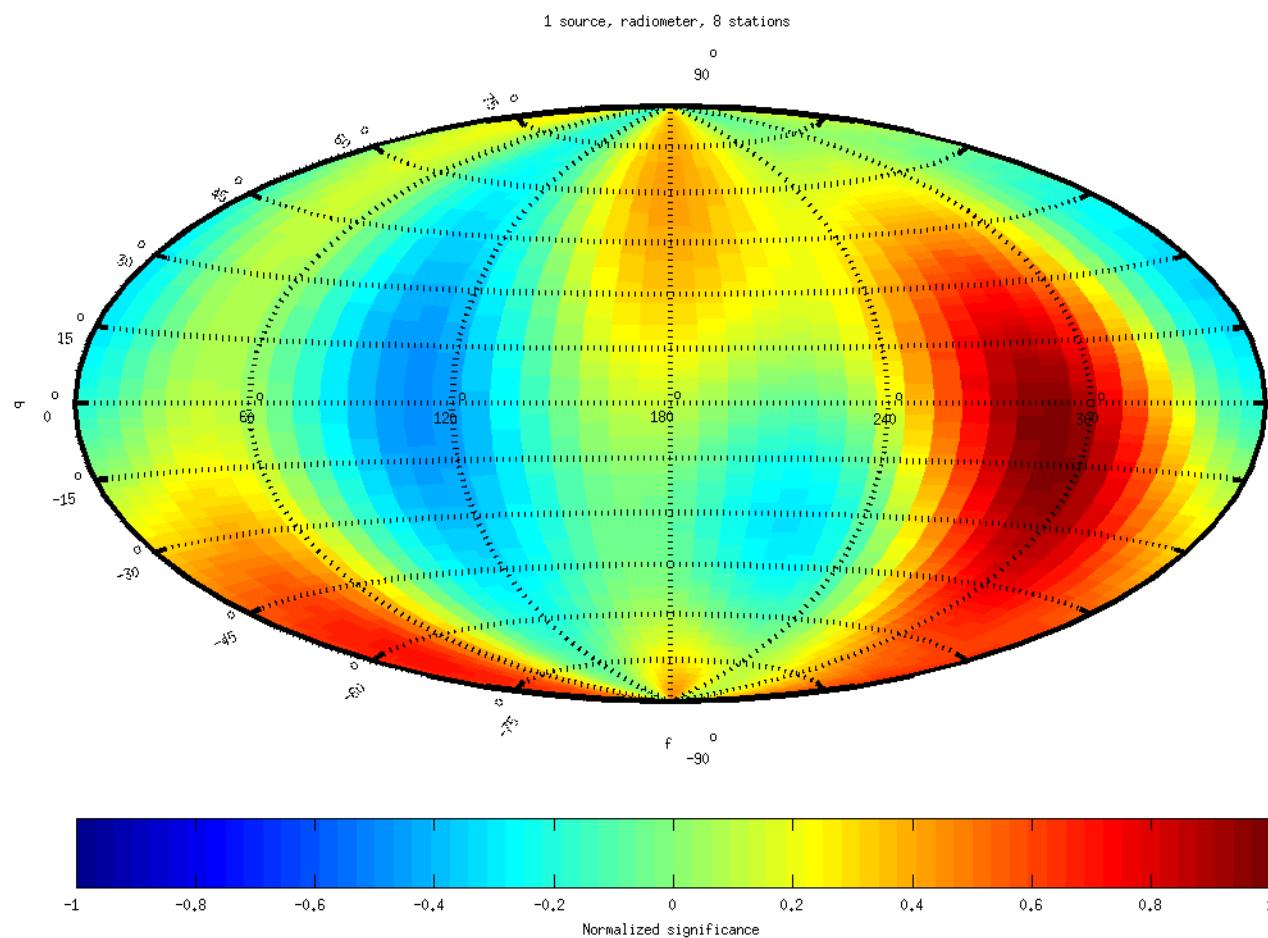
# Stest29: f\_analyse = .001



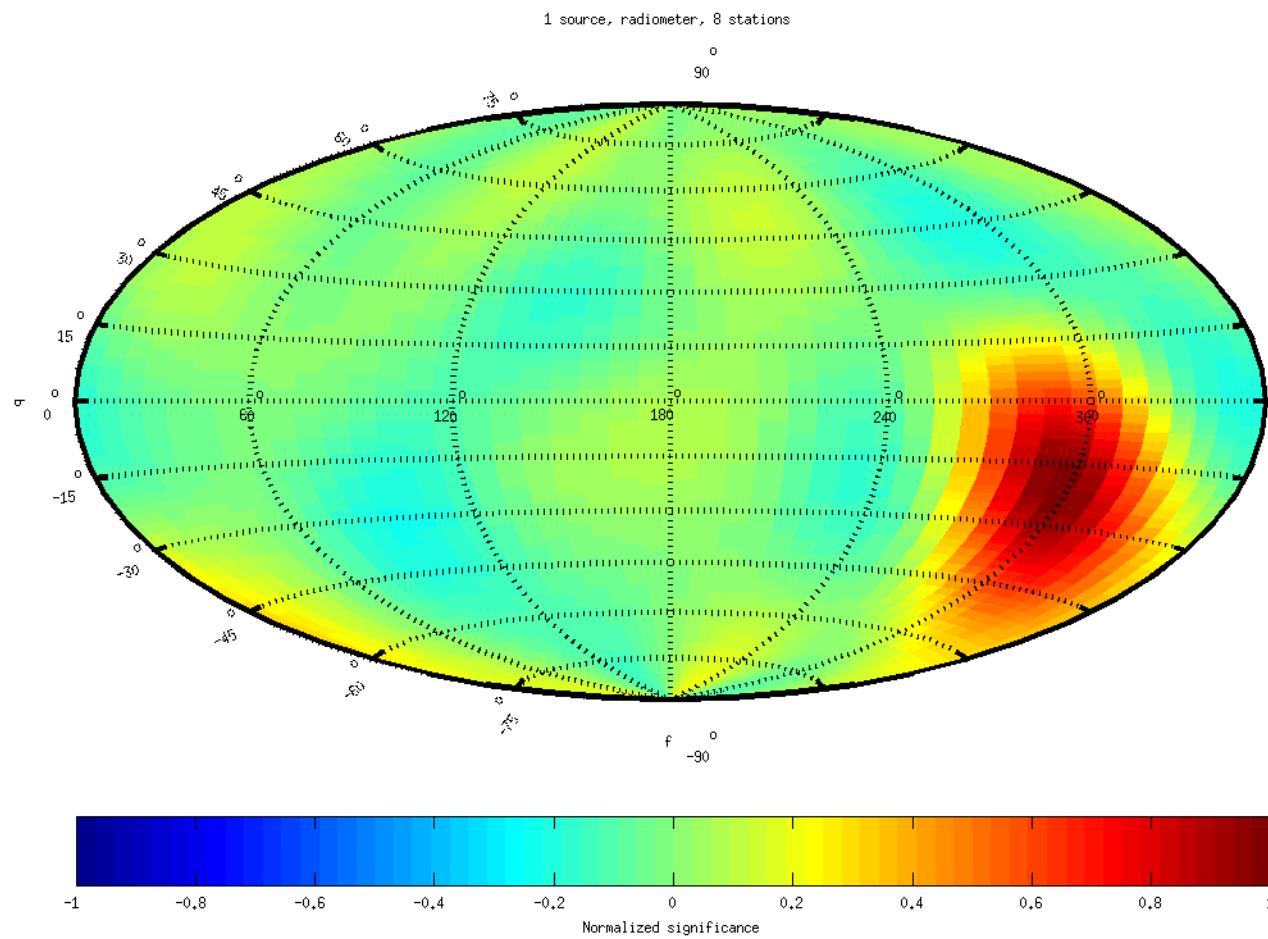
# Stest30: f\_analyse = .01



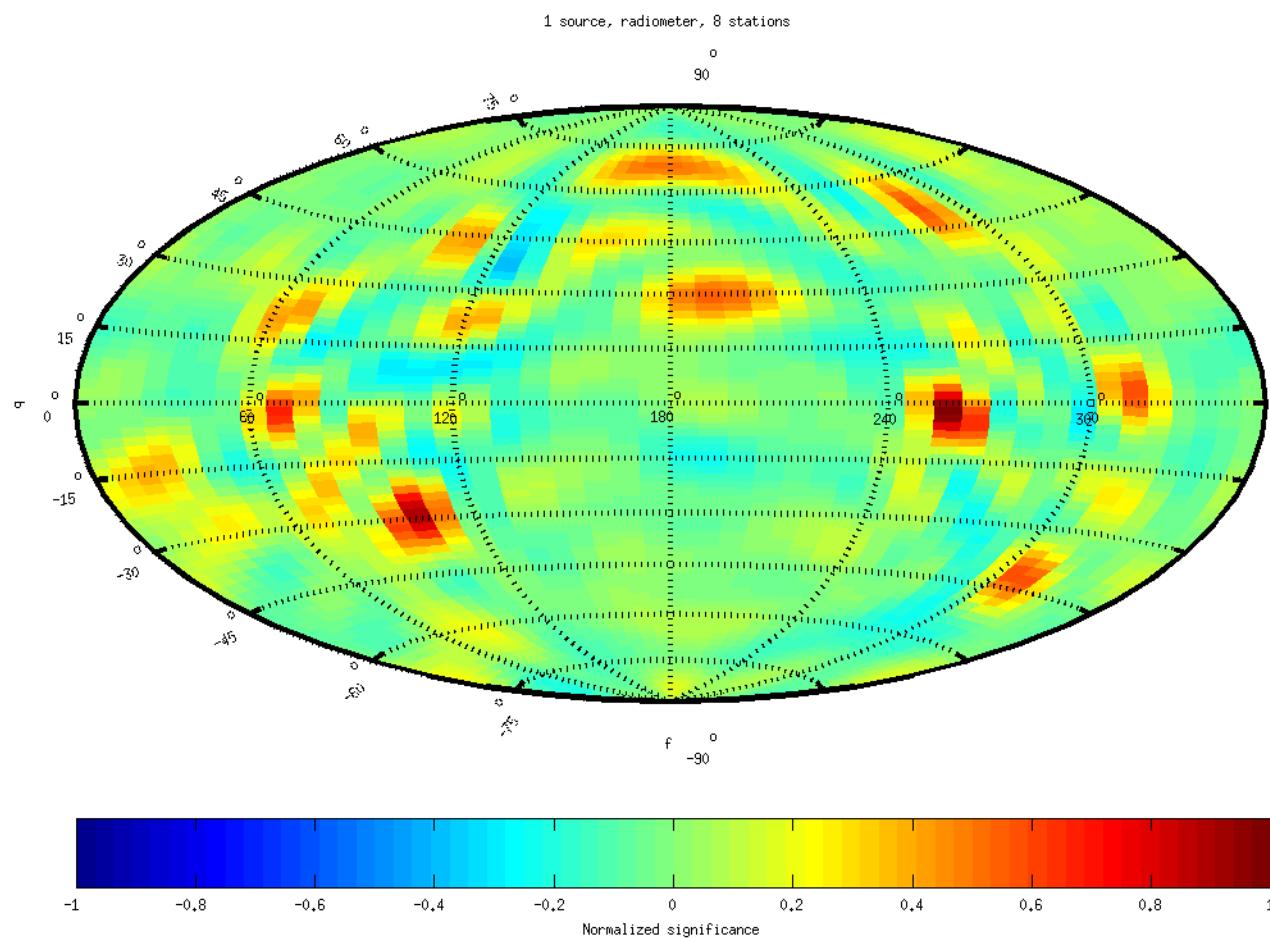
# Stest31: f\_analyse = .1



# Stest32: f\_analyse = 1



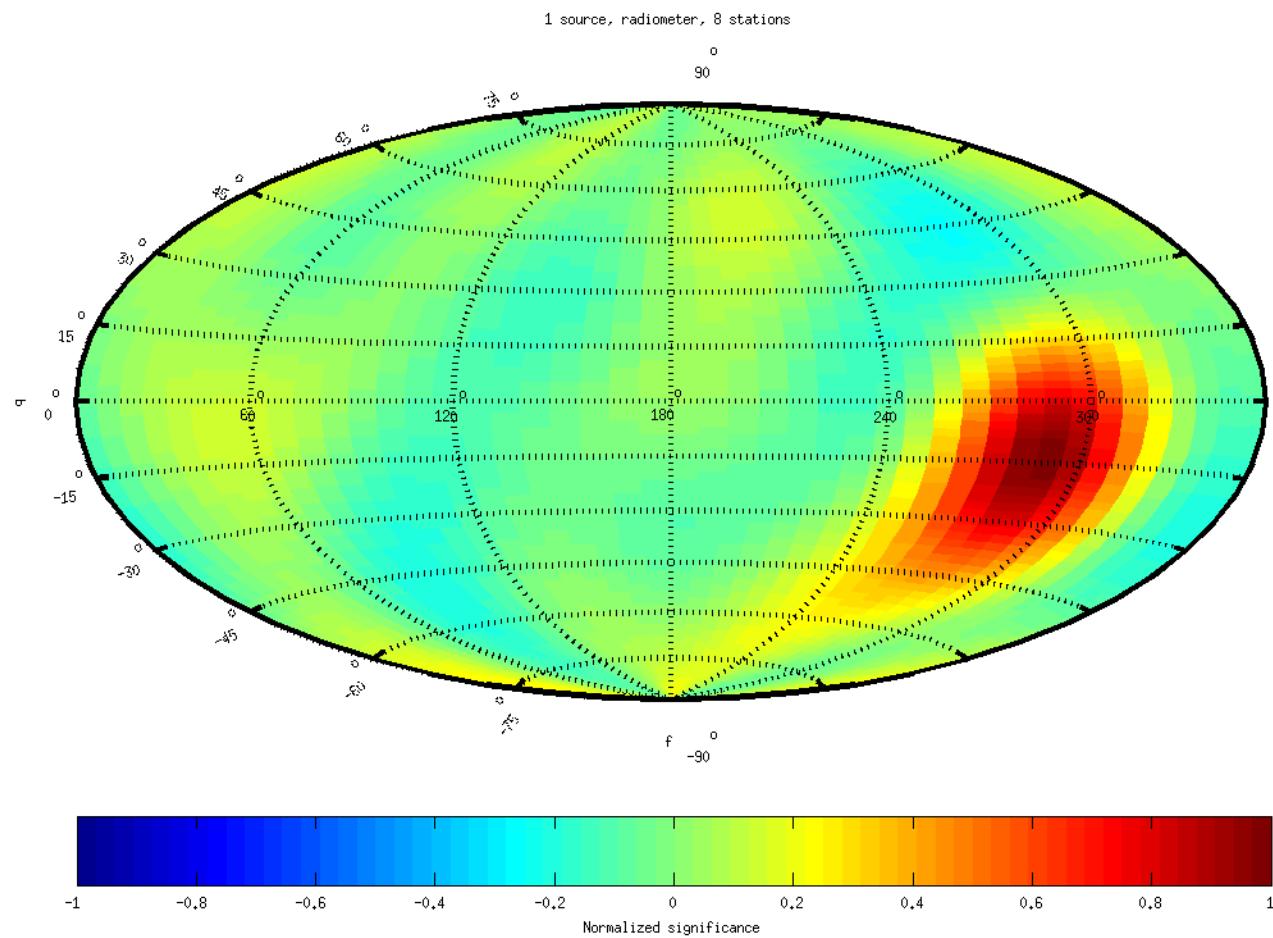
# Stest33: f\_analyse = 5



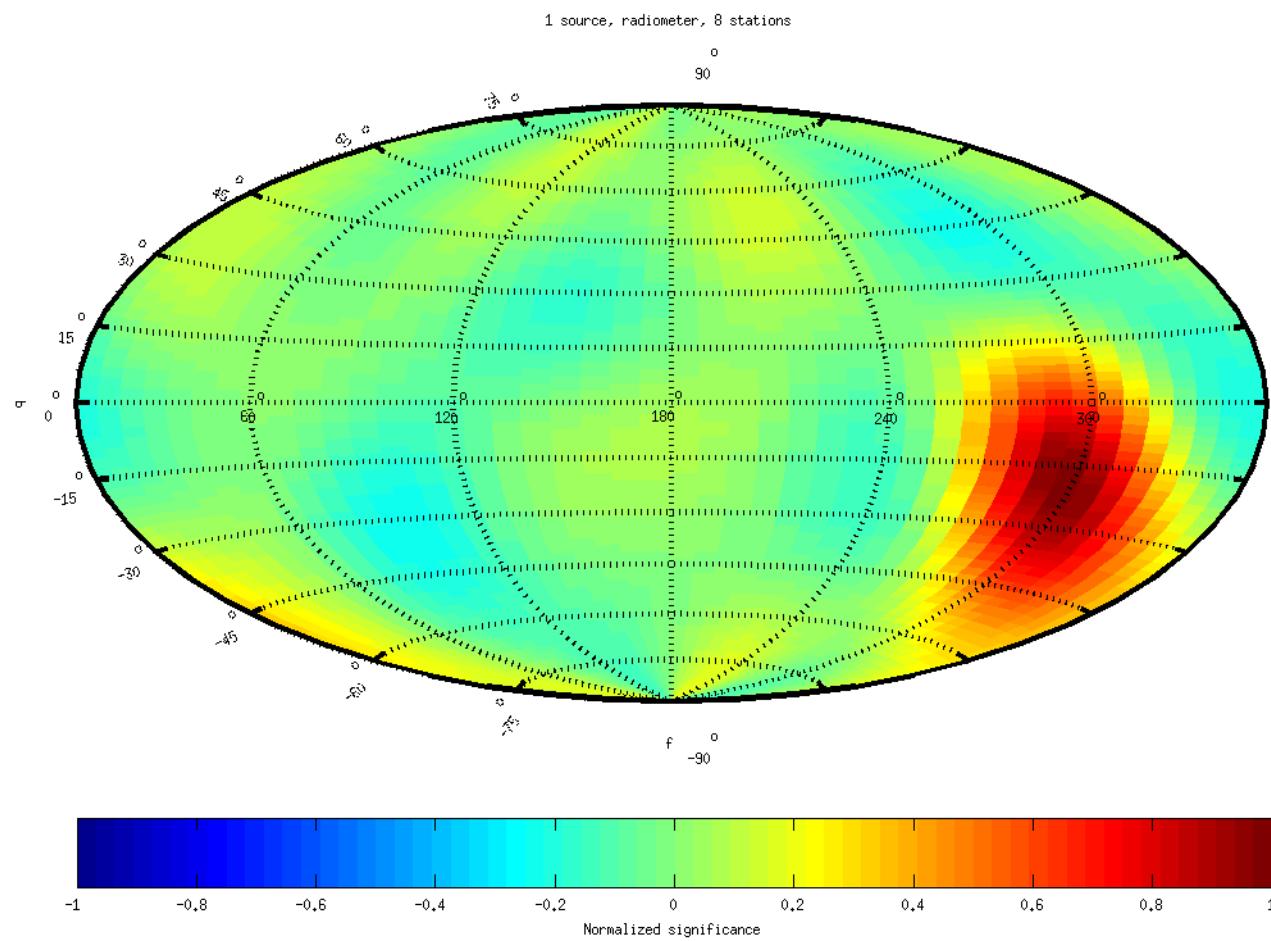
# Broadband / Polarization Testing

- In this section, we inject a broadband signal with a random polarization. Otherwise all parameters are the same as before, with  $f\_analyse$  being 1.

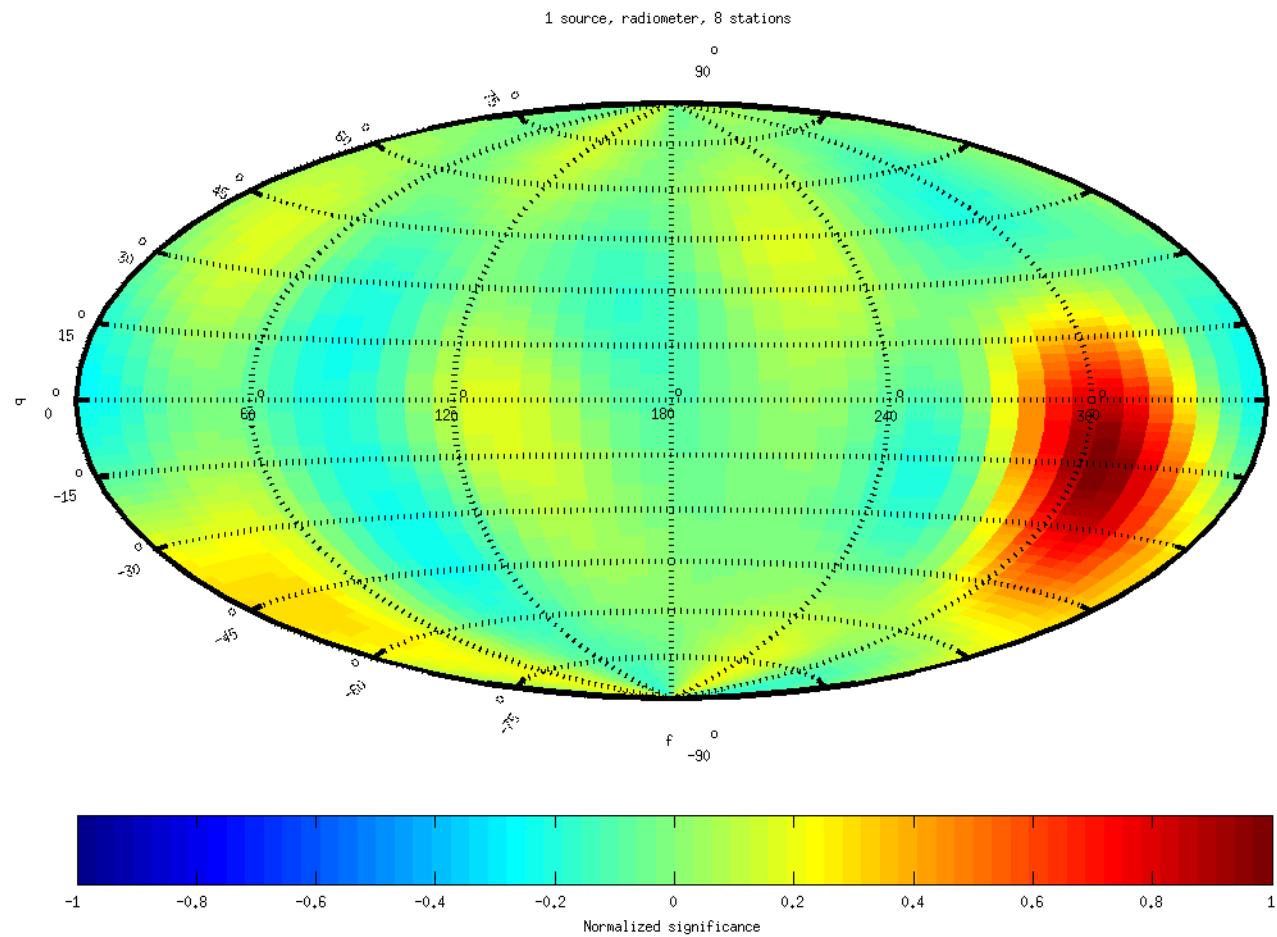
# Stest34: psi = 221.1975



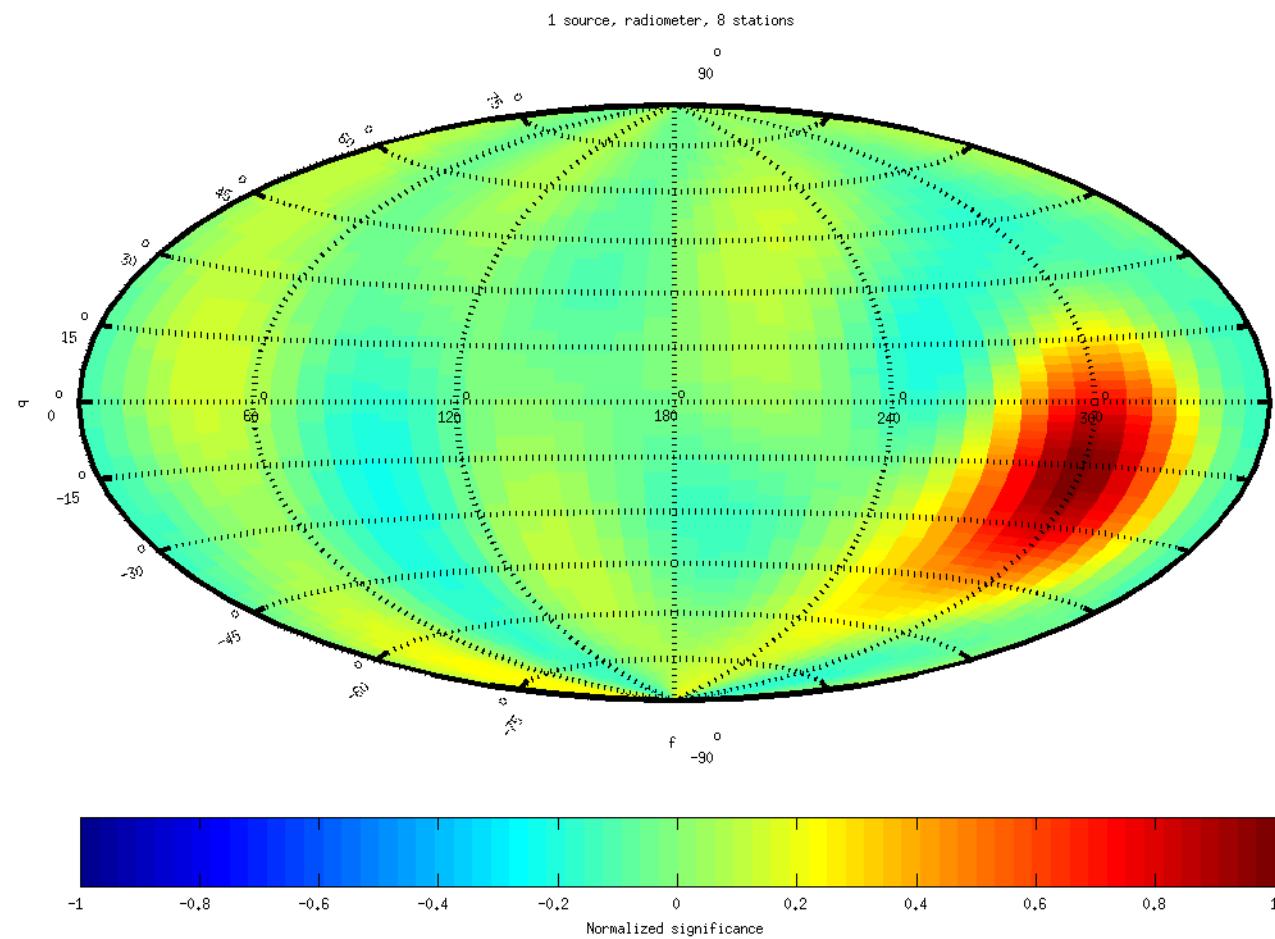
# Stest35: $\psi = 41.2925$



# Stest 36: psi = 314.6409



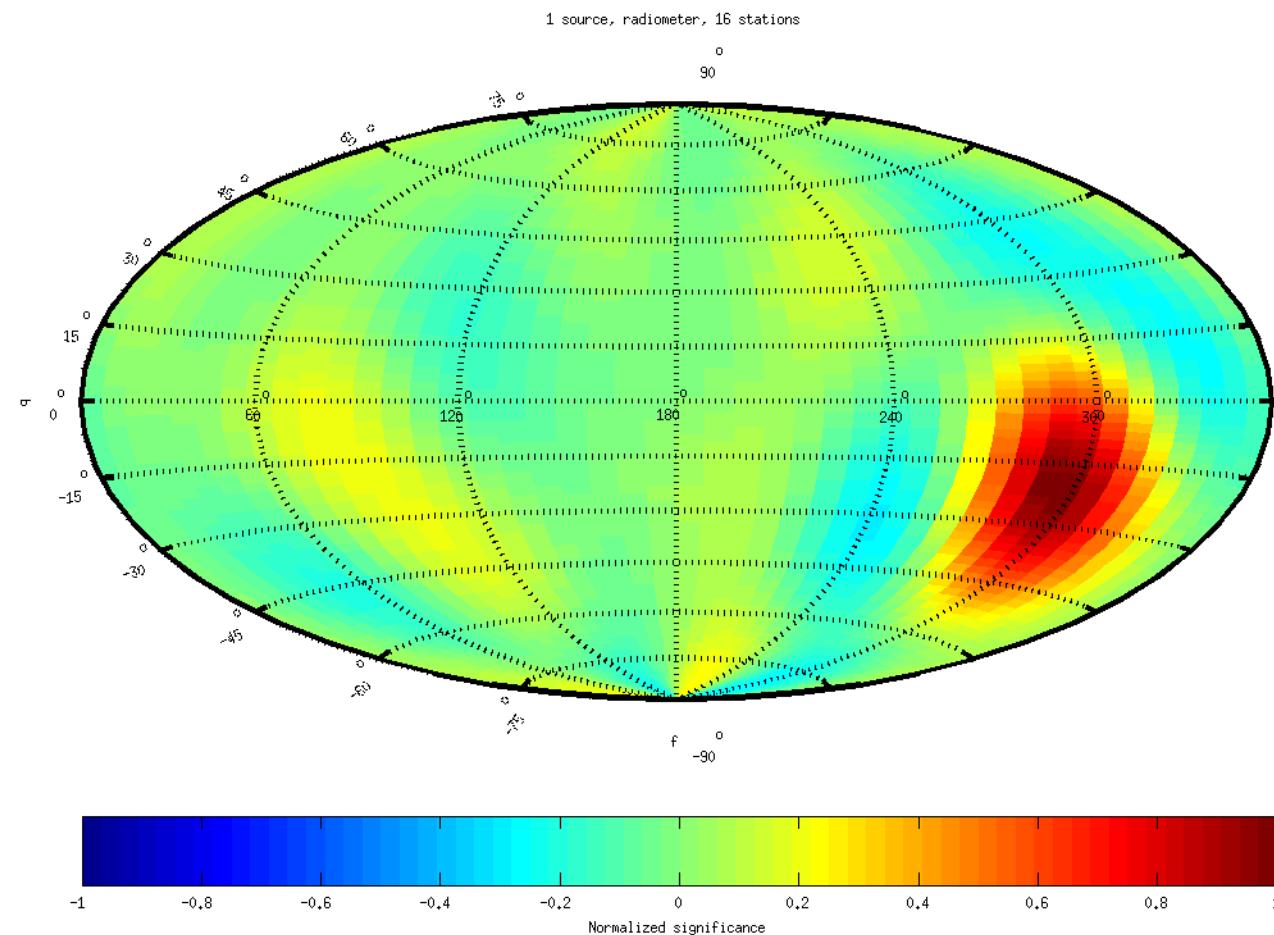
# Stest37: psi = 151.9996



# Detector Number Testing

□ In this section we go back to a monochromatic signal of frequency 1, with a polarization angle of 45. All other parameters are the same as before, except for the number of detectors, which is varied.

# Stest38: 16 detectors



# Stest39: 32 detectors

