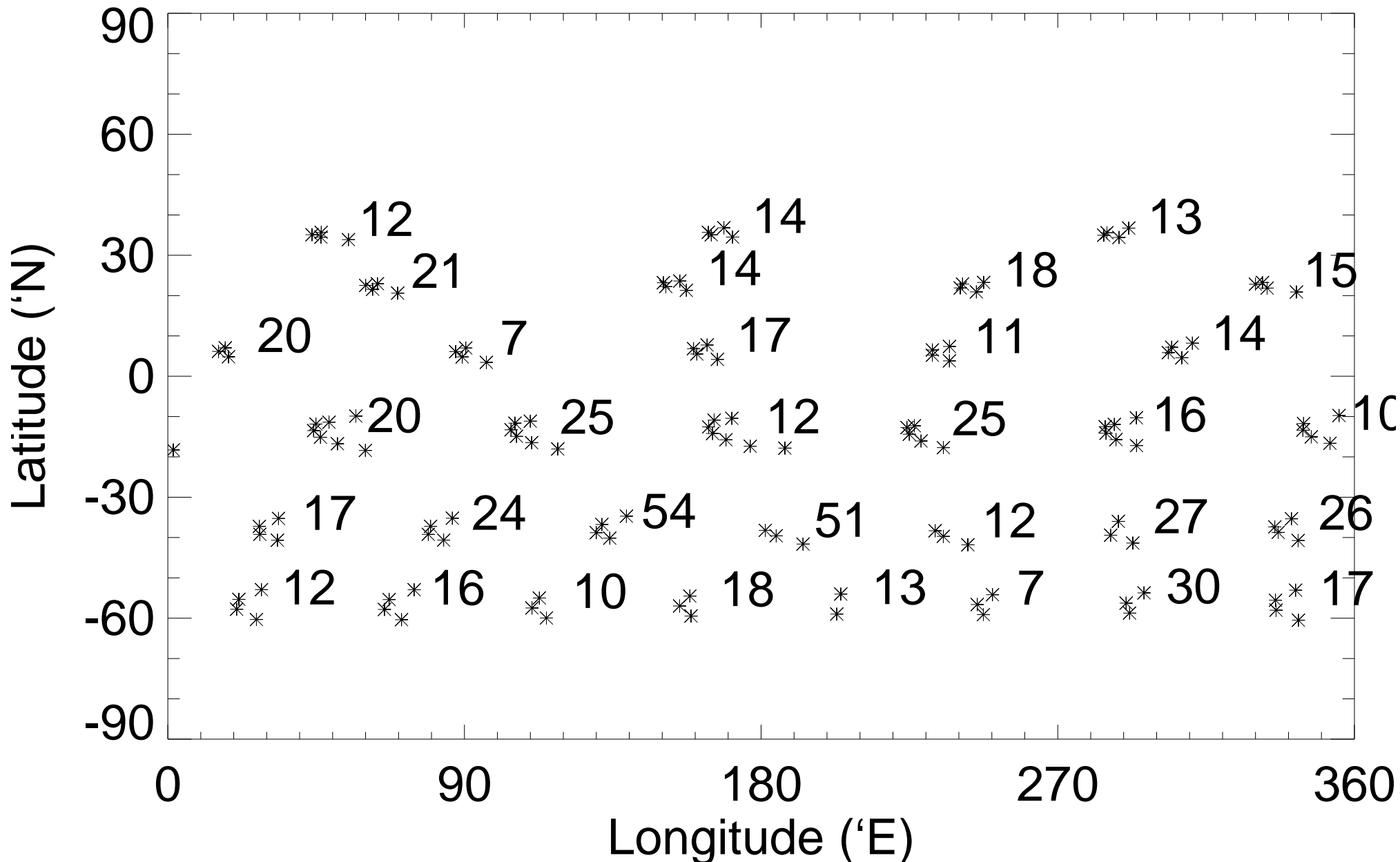
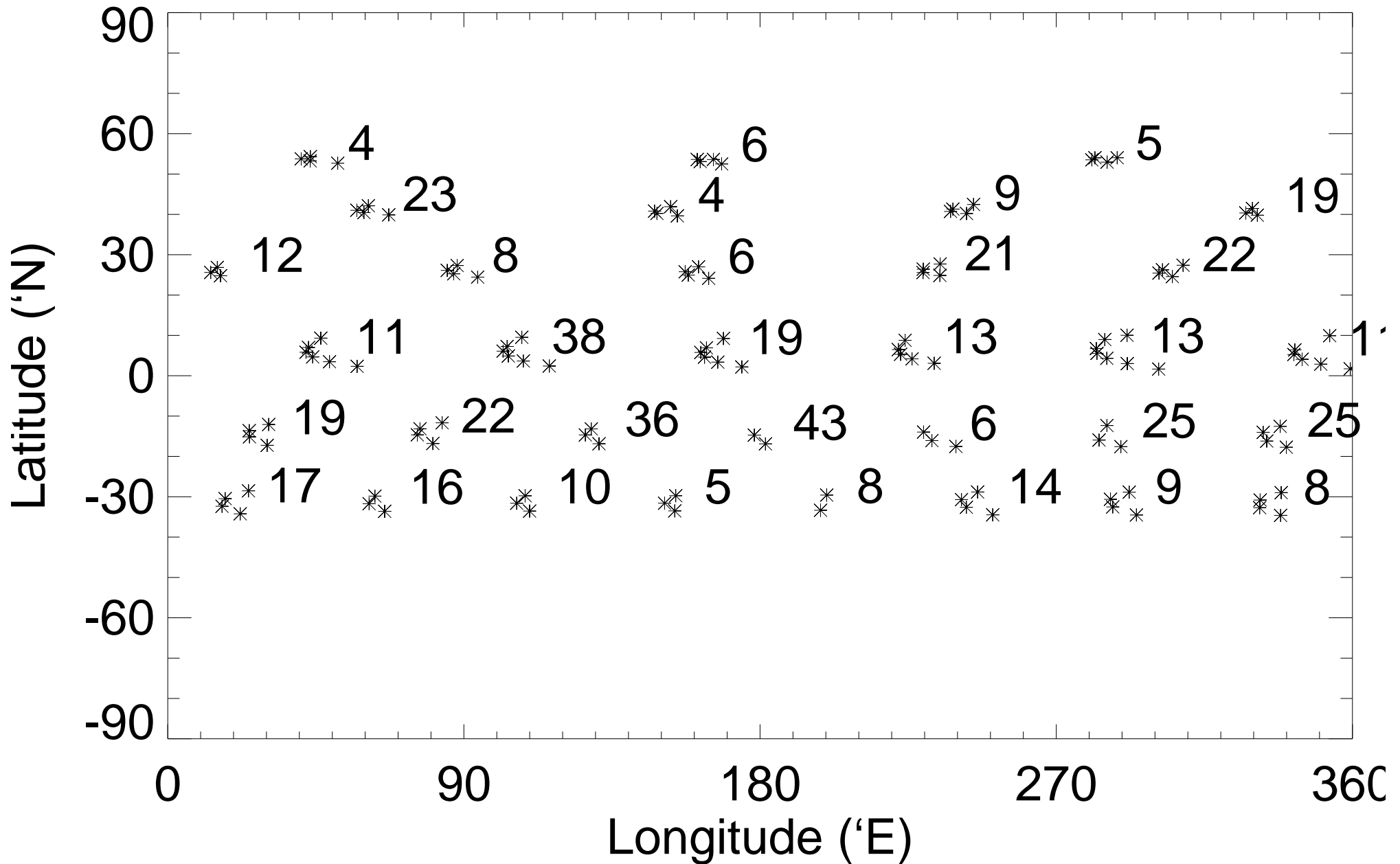


Resonances at 130 km, Phase 2, Inbound



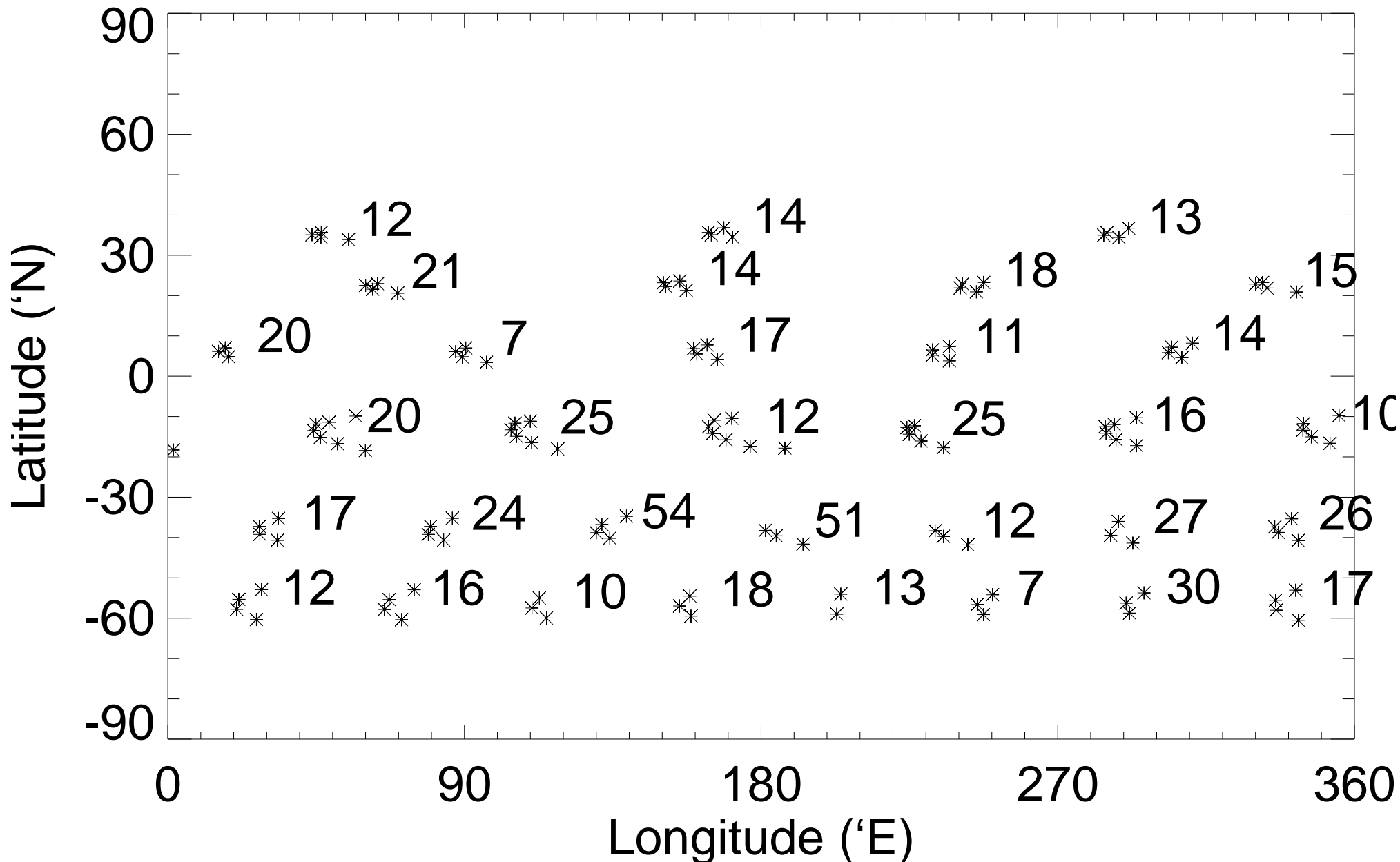
Std Dev within Cluster as Percentage of Cluster Mean
Each cluster contains data taken at the same
lat, lon, and LST over several days

Resonances at 130 km, Phase 2, Outbound



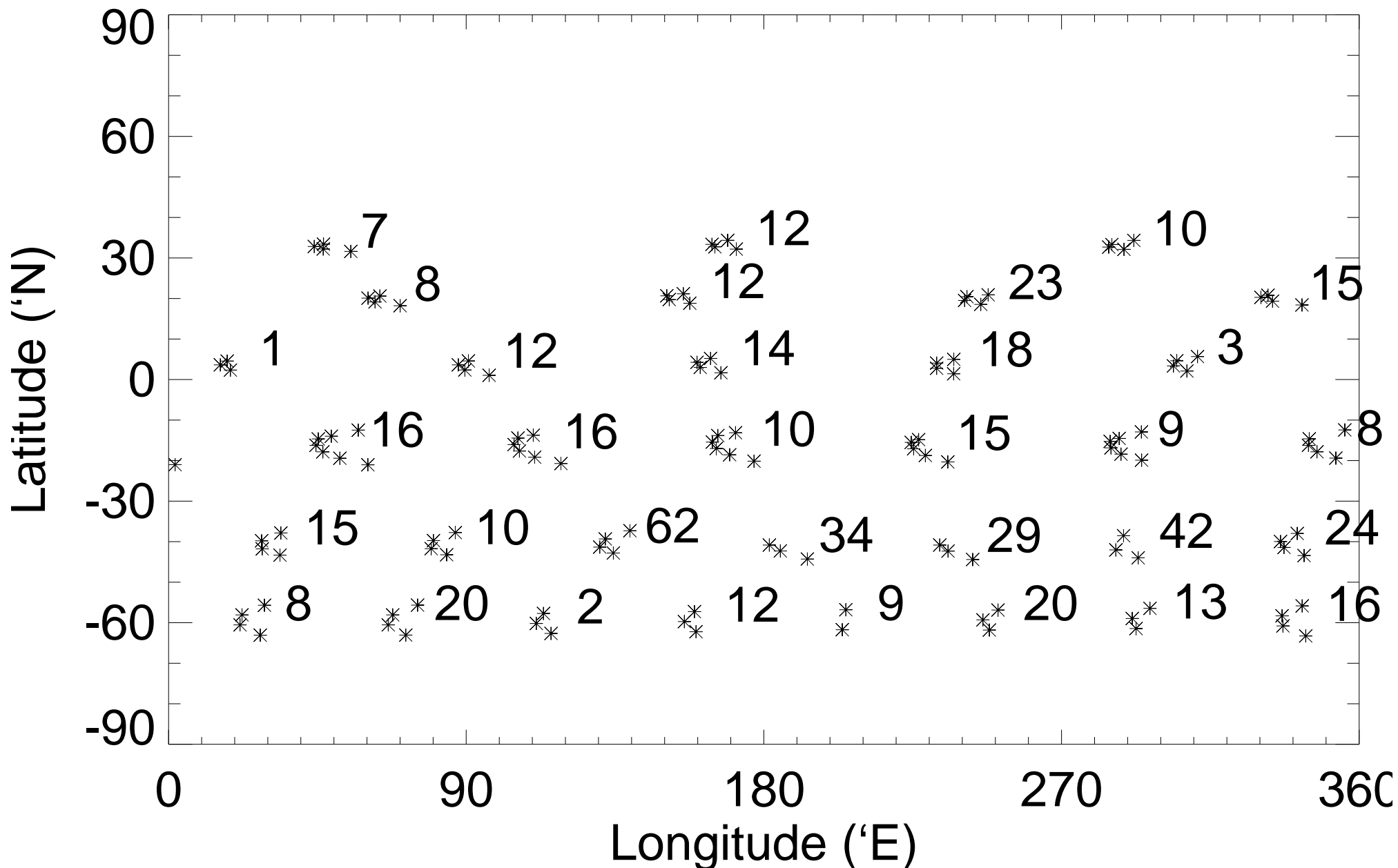
Std Dev within Cluster as Percentage of Cluster Mean
Each cluster contains data taken at the same
lat, lon, and LST over several days

Resonances at 130 km, Phase 2, Inbound



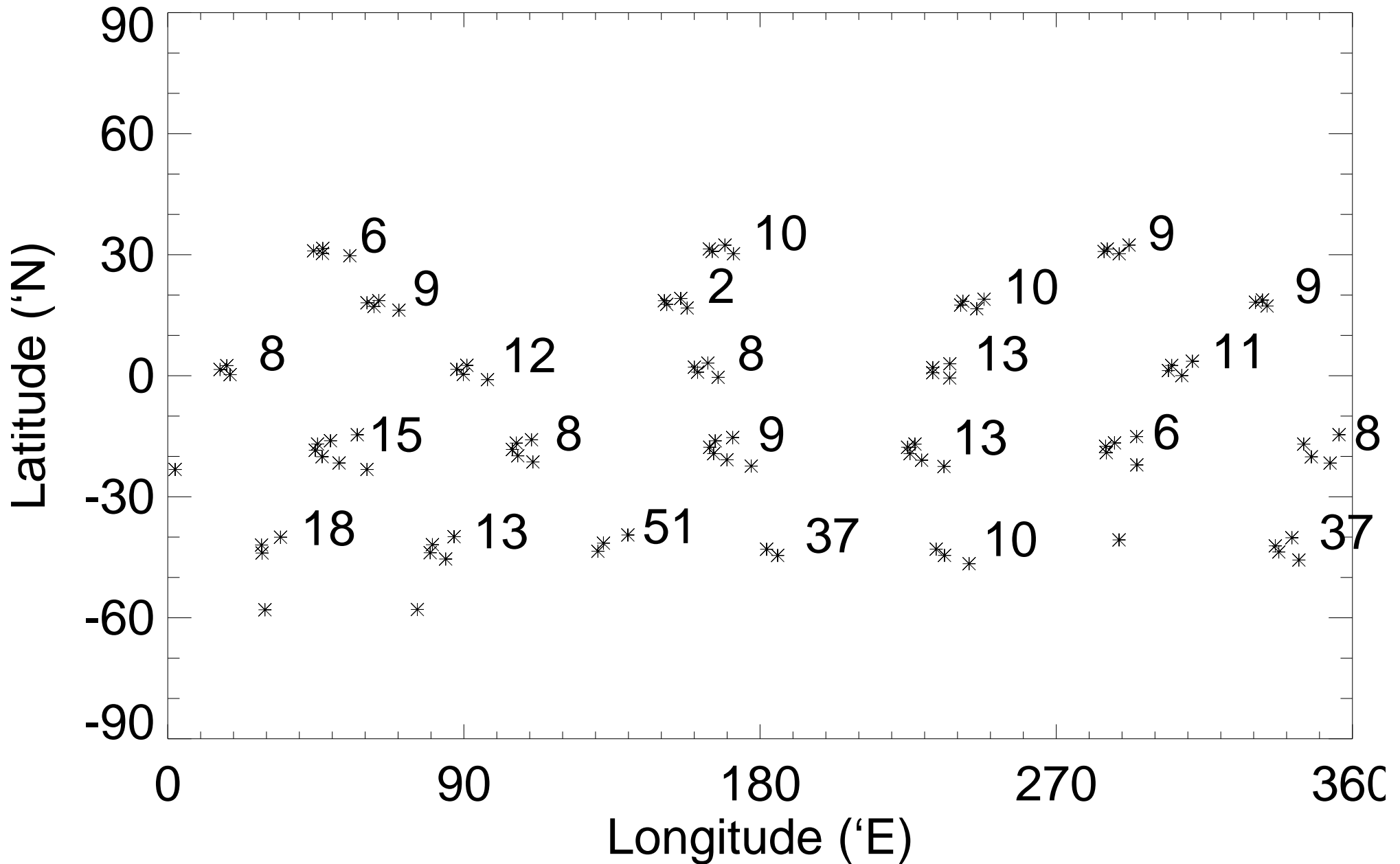
Std Dev within Cluster as Percentage of Cluster Mean
Each cluster contains data taken at the same
lat, lon, and LST over several days

Resonances at 140 km, Phase 2, Inbound



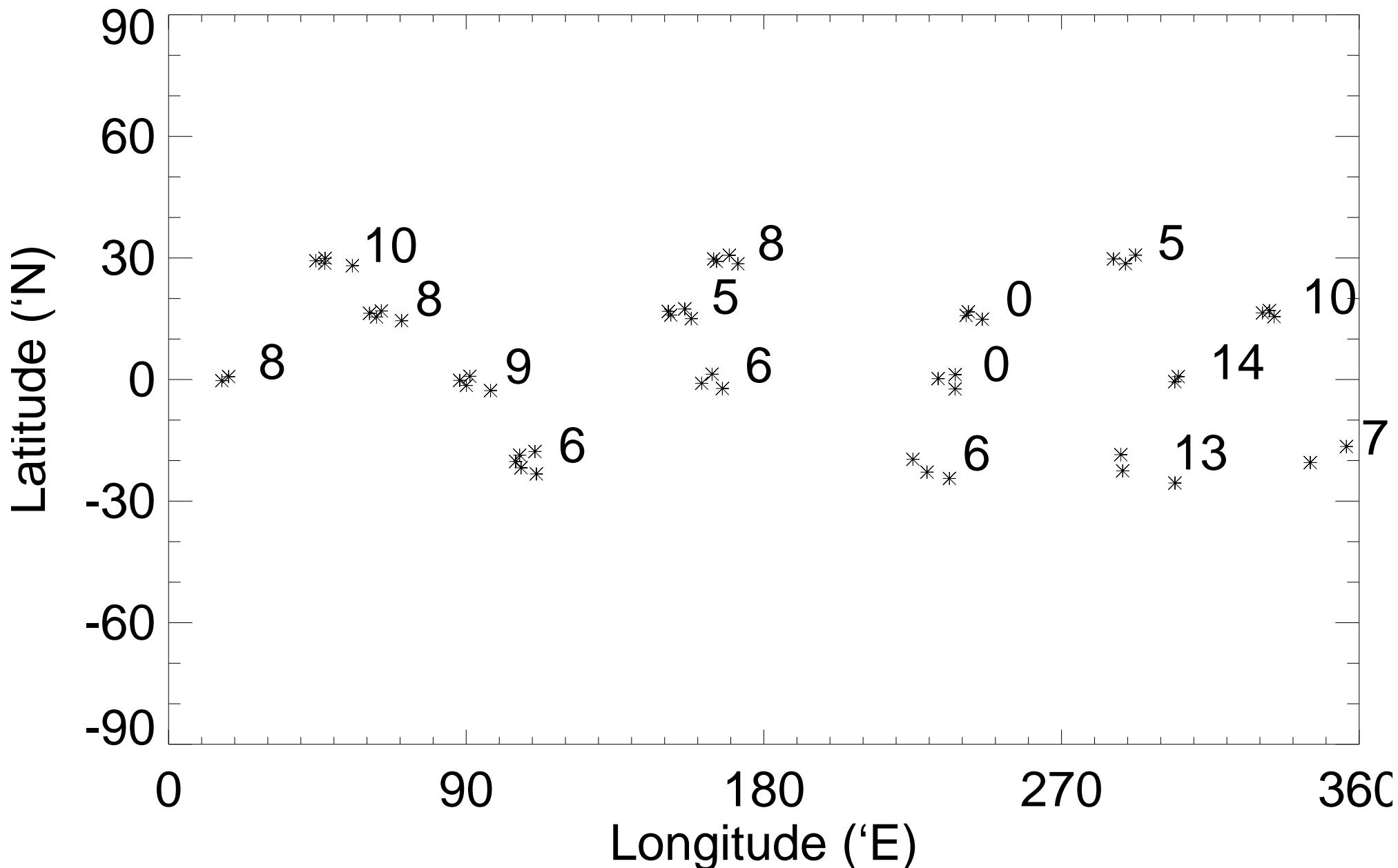
Std Dev within Cluster as Percentage of Cluster Mean
Each cluster contains data taken at the same
lat, lon, and LST over several days

Resonances at 150 km, Phase 2, Inbound



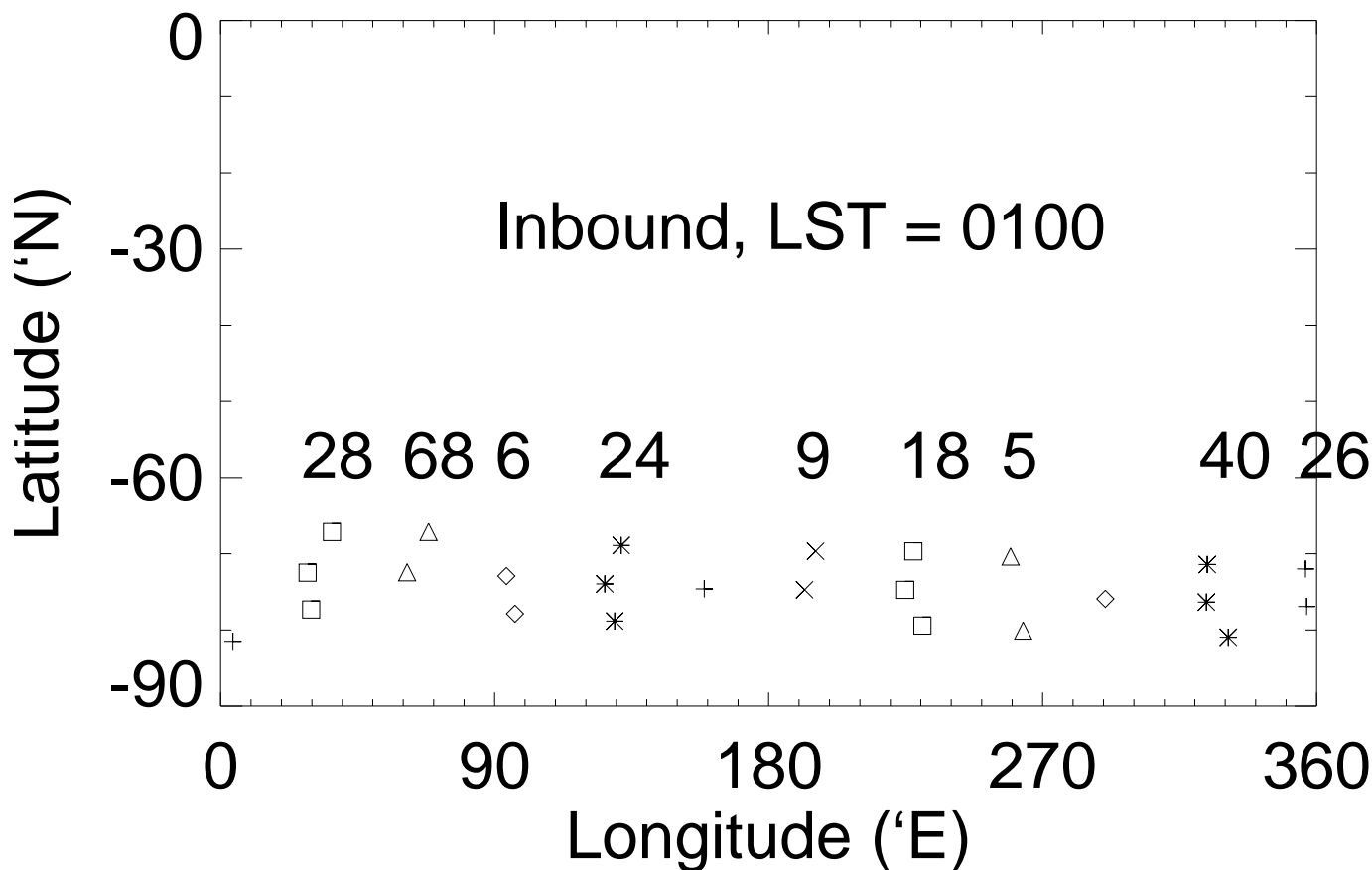
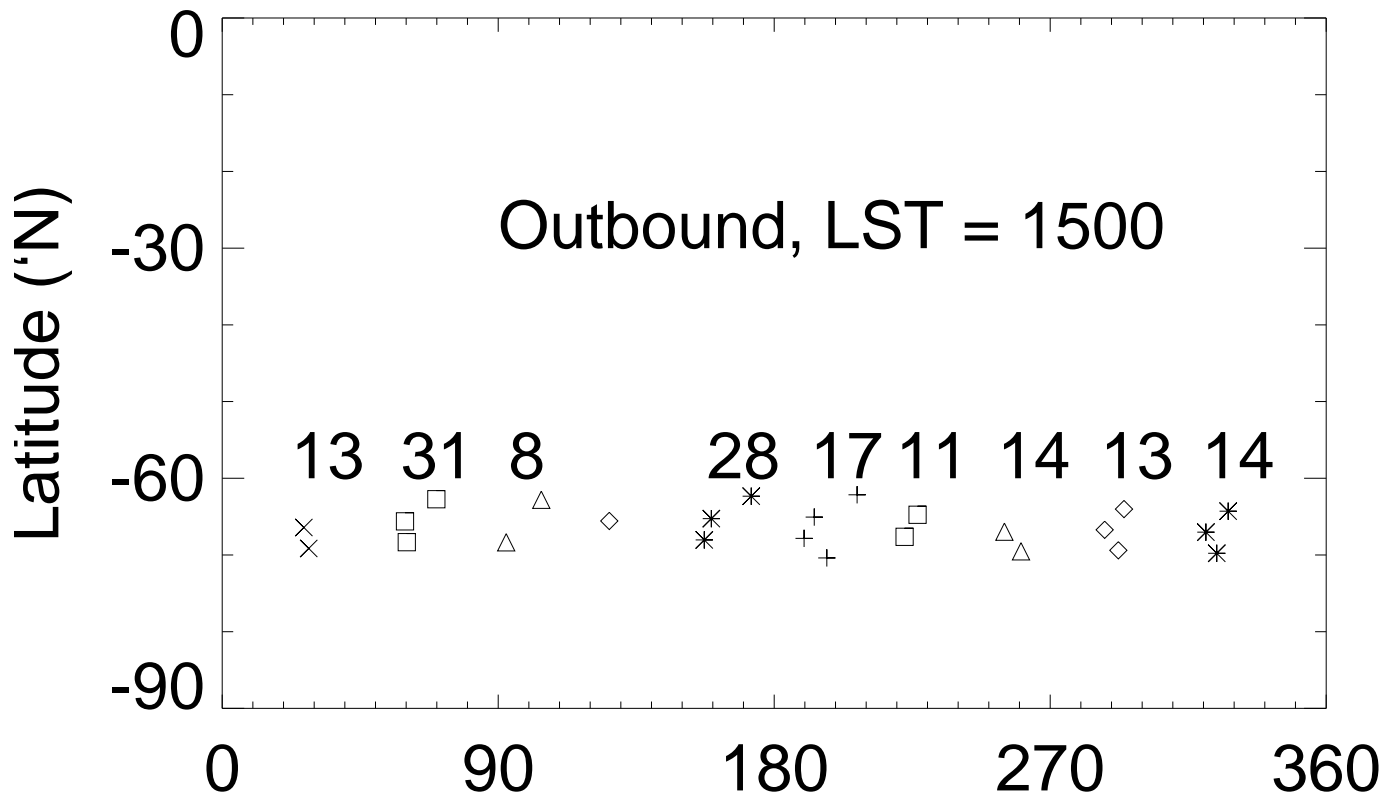
Std Dev within Cluster as Percentage of Cluster Mean
Each cluster contains data taken at the same
lat, lon, and LST over several days

Resonances at 160 km, Phase 2, Inbound



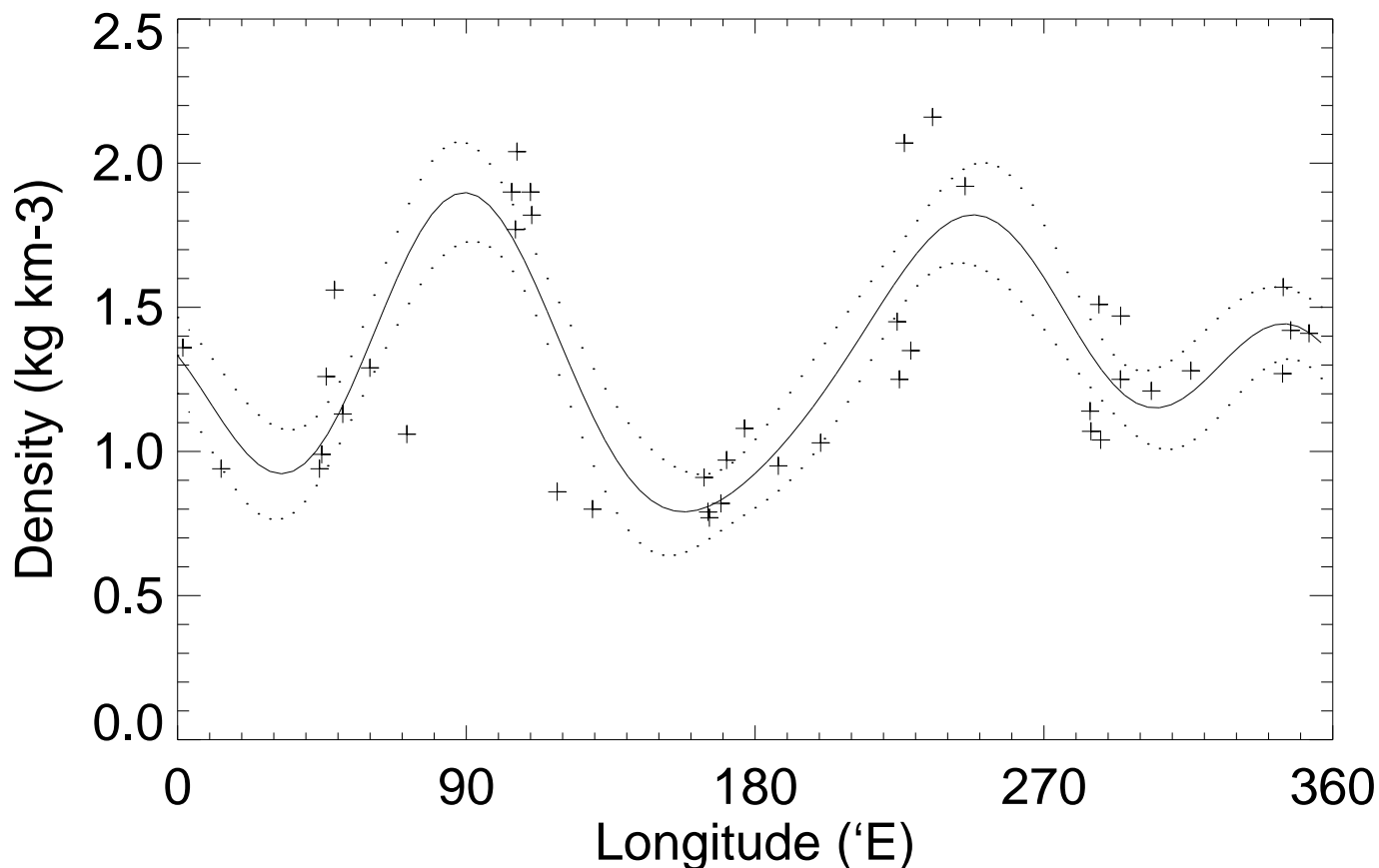
Std Dev within Cluster as Percentage of Cluster Mean
Each cluster contains data taken at the same
lat, lon, and LST over several days

11:1 Resonance at 130 km, Phase 2



Std Dev within Cluster as Percentage of Cluster Mean Each cluster contains data taken at the same lat, lon, and LST over several days

Wave-4 fit to inbound densities at 130km Phase 2, -20 to -10 'N, constant altitude data, daytime



+ = MGS data, solid line = least squares wave-4 fit,
dotted lines = 1 sigma uncertainty in fit

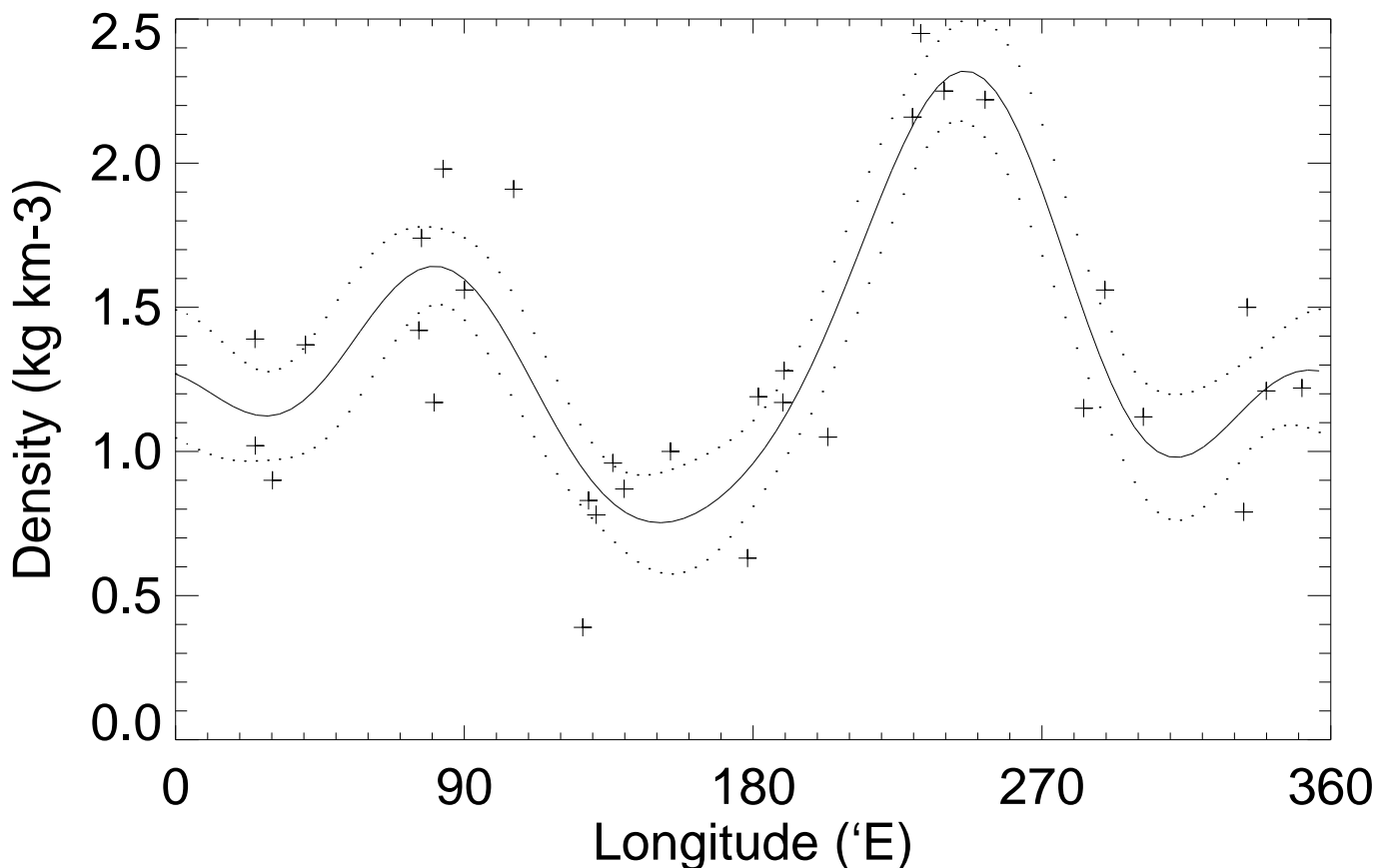
Background density	=	1.324 * (1 +/- 0.032)
Normalized Wave 1 amplitude	=	0.054 * (1 +/- 0.833)
Wave 1 phase	=	298.720 +/- 47.719
Normalized Wave 2 amplitude	=	0.249 * (1 +/- 0.235)
Wave 2 phase	=	80.359 +/- 6.408
Normalized Wave 3 amplitude	=	0.204 * (1 +/- 0.289)
Wave 3 phase	=	103.013 +/- 5.112
Normalized Wave 4 amplitude	=	0.105 * (1 +/- 0.549)
Wave 4 phase	=	81.474 +/- 7.669

Statistics neglect uncertainties in the data

Ratio of Mean Sq. Err. in wavefit to constant fit = 0.394

Wave phases are first maximum east of 0'E

Wave-4 fit to outbound densities at 130km Phase 2, -20 to -10 'N, constant altitude data, daytime



+ = MGS data, solid line = least squares wave-4 fit,
dotted lines = 1 sigma uncertainty in fit

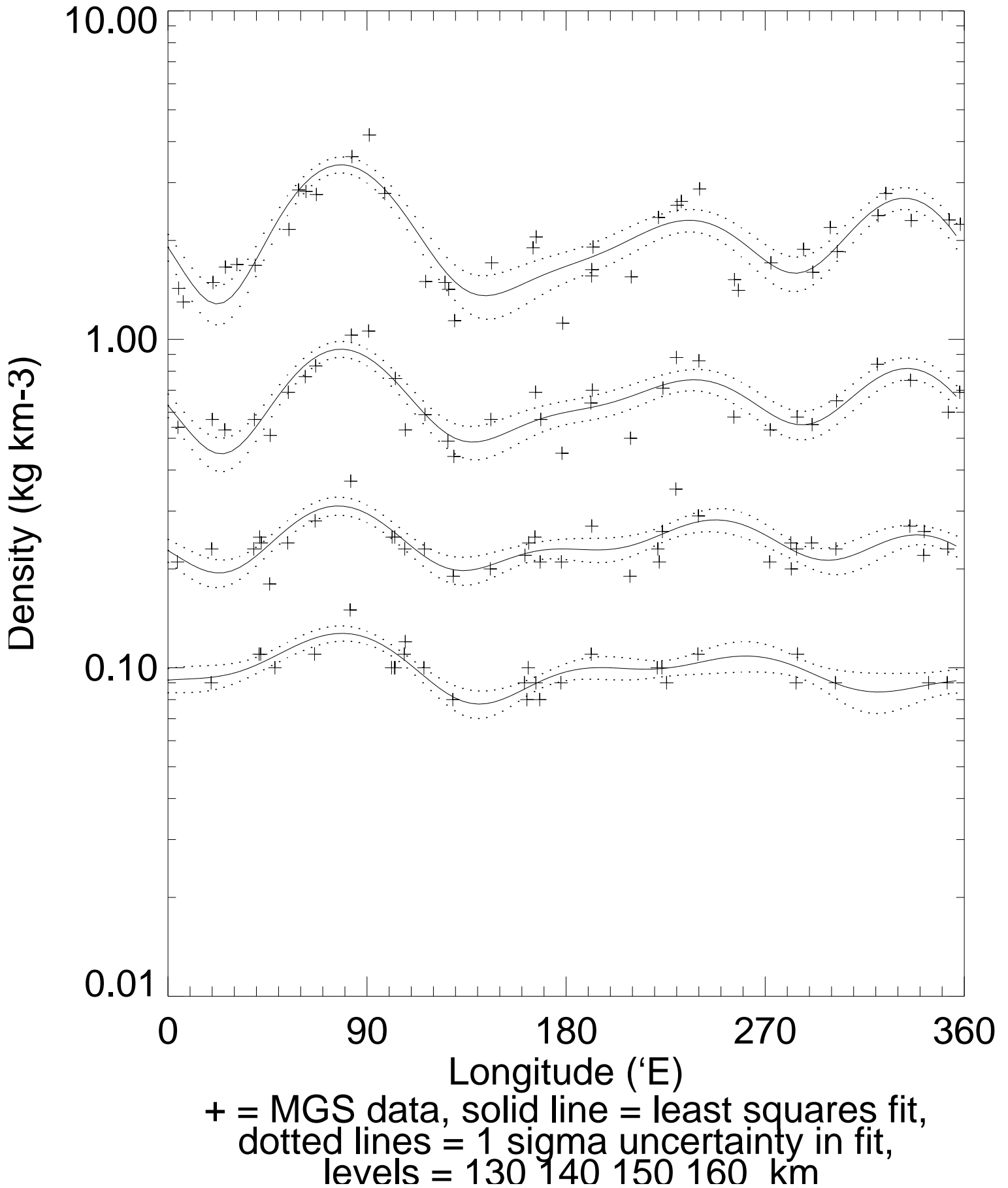
Background density	=	$1.350 * (1 \pm 0.041)$
Normalized Wave 1 amplitude	=	$0.182 * (1 \pm 0.324)$
Wave 1 phase	=	261.755 ± 17.738
Normalized Wave 2 amplitude	=	$0.355 * (1 \pm 0.166)$
Wave 2 phase	=	65.830 ± 4.631
Normalized Wave 3 amplitude	=	$0.156 * (1 \pm 0.465)$
Wave 3 phase	=	111.628 ± 8.411
Normalized Wave 4 amplitude	=	$0.101 * (1 \pm 0.680)$
Wave 4 phase	=	76.779 ± 10.270

Statistics neglect uncertainties in the data

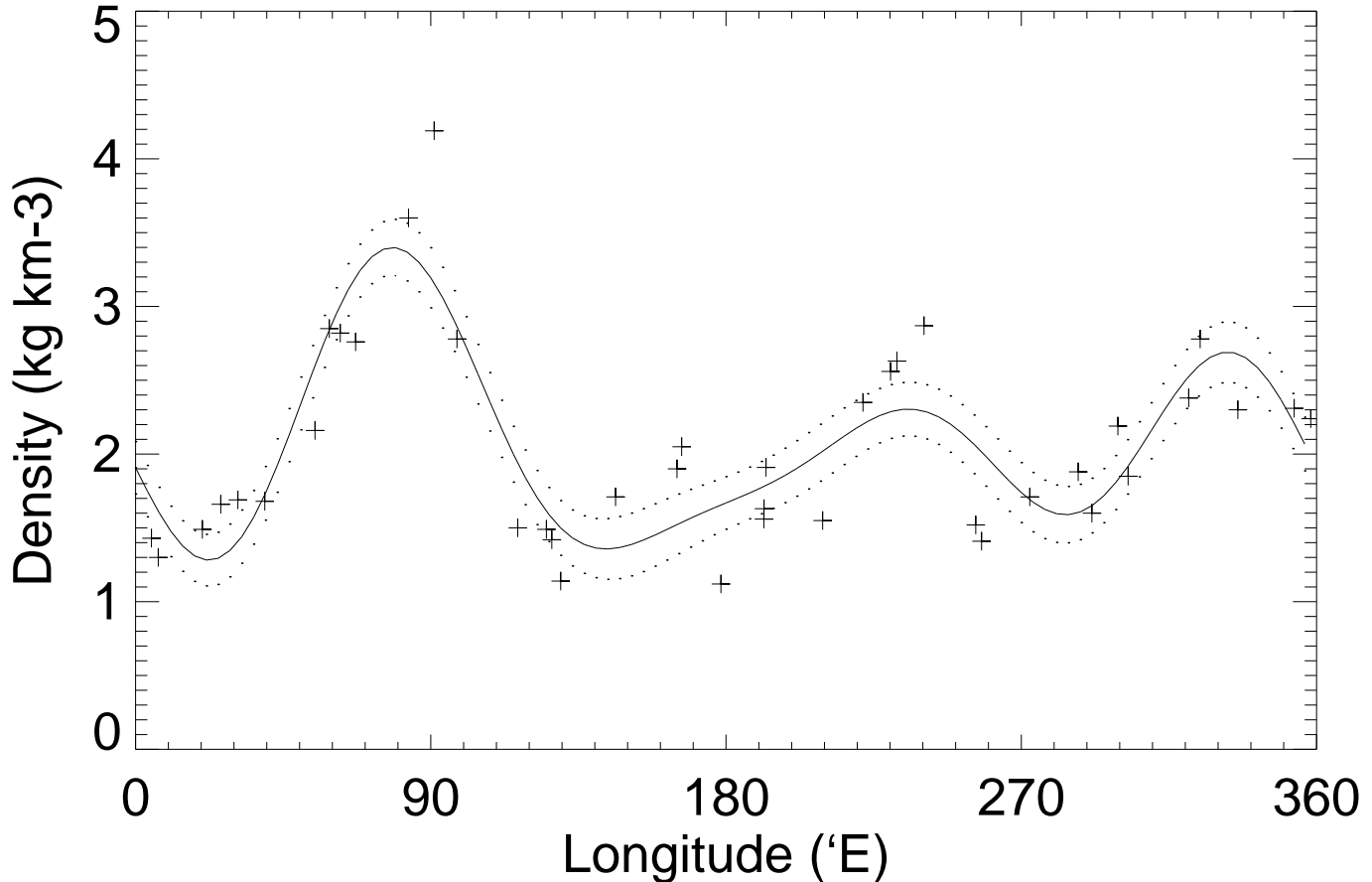
Ratio of Mean Sq. Err. in wavefit to constant fit = 0.267

Wave phases are first maximum east of 0'E

Wave-4 fit to outbound densities, Phase 2 10 to 20 'N, constant altitude data, daytime



Wave-4 fit to outbound densities at 130km Phase 2, 10 to 20 'N, constant altitude data, daytime



+ = MGS data, solid line = least squares wave-4 fit,
dotted lines = 1 sigma uncertainty in fit

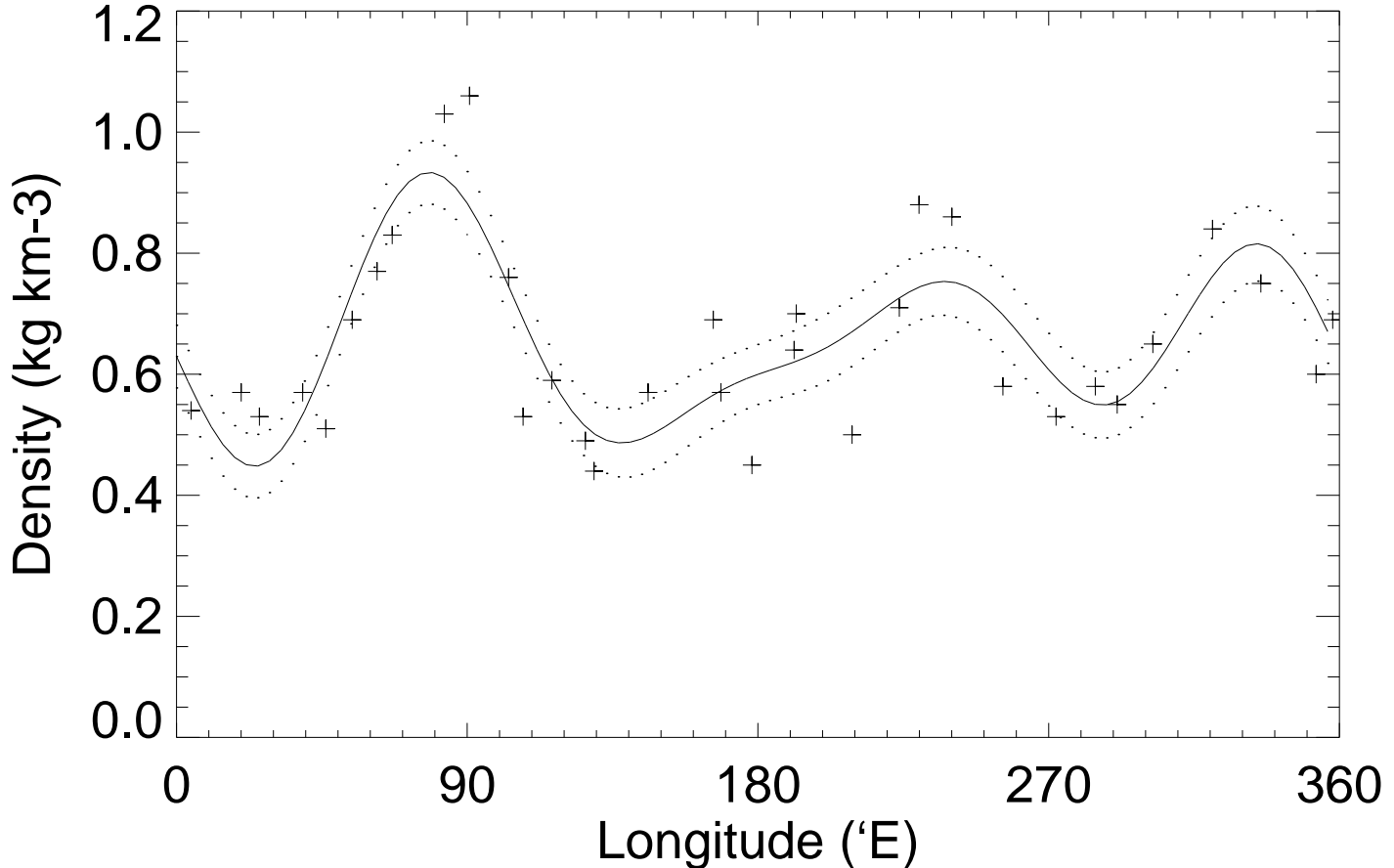
Background density	=	2.066 * (1 +/- 0.030)
Normalized Wave 1 amplitude	=	0.119 * (1 +/- 0.363)
Wave 1 phase	=	40.455 +/- 20.787
Normalized Wave 2 amplitude	=	0.176 * (1 +/- 0.251)
Wave 2 phase	=	79.623 +/- 7.061
Normalized Wave 3 amplitude	=	0.277 * (1 +/- 0.171)
Wave 3 phase	=	87.733 +/- 2.776
Normalized Wave 4 amplitude	=	0.157 * (1 +/- 0.283)
Wave 4 phase	=	70.233 +/- 3.925

Statistics neglect uncertainties in the data

Ratio of Mean Sq. Err. in wavefit to constant fit = 0.289

Wave phases are first maximum east of 0'E

Wave-4 fit to outbound densities at 140km Phase 2, 10 to 20 'N, constant altitude data, daytime



+ = MGS data, solid line = least squares wave-4 fit,
dotted lines = 1 sigma uncertainty in fit

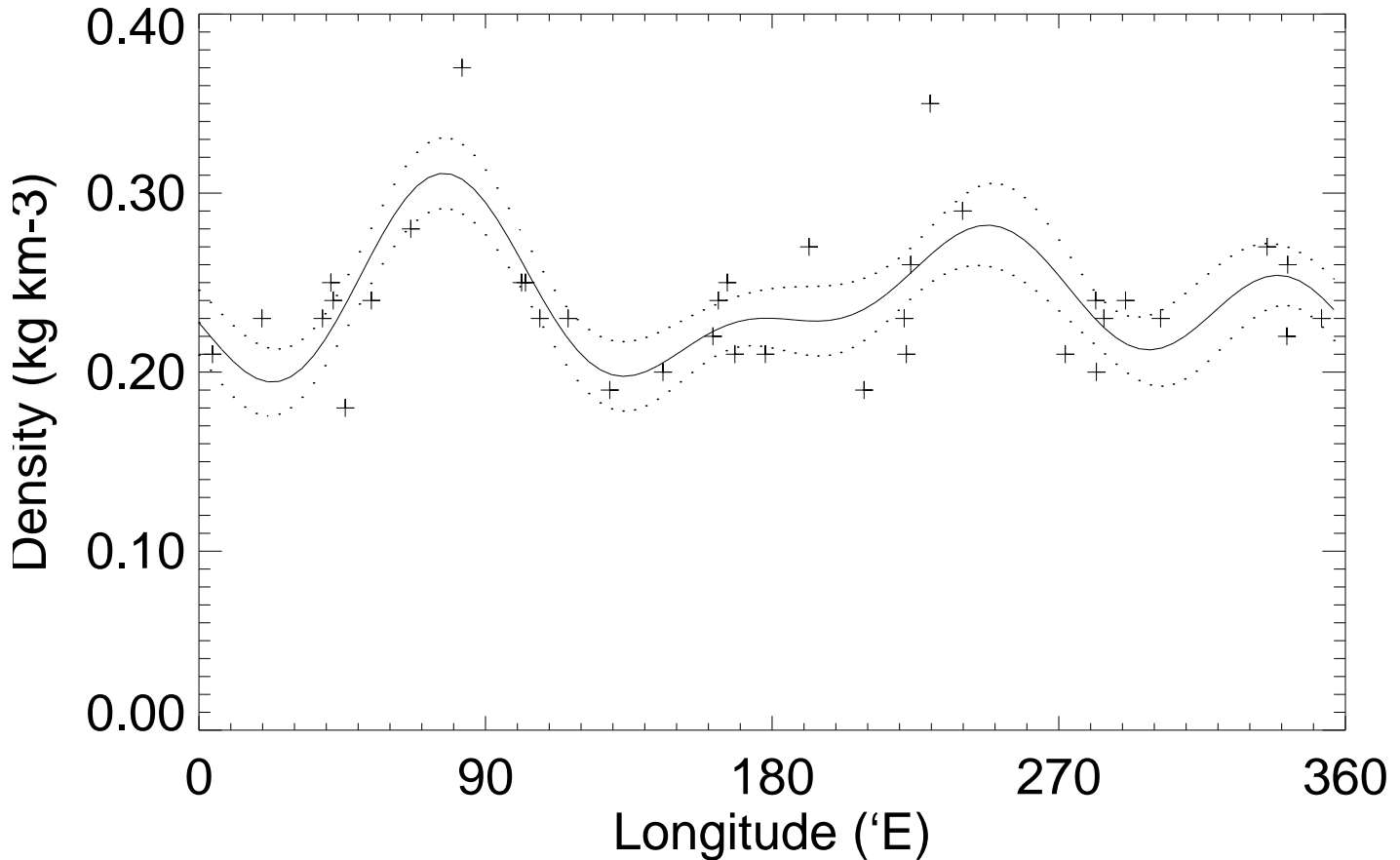
Background density	=	0.657 * (1 +/- 0.028)
Normalized Wave 1 amplitude	=	0.040 * (1 +/- 0.973)
Wave 1 phase	=	13.956 +/- 55.725
Normalized Wave 2 amplitude	=	0.111 * (1 +/- 0.352)
Wave 2 phase	=	76.657 +/- 10.323
Normalized Wave 3 amplitude	=	0.200 * (1 +/- 0.212)
Wave 3 phase	=	88.413 +/- 3.513
Normalized Wave 4 amplitude	=	0.135 * (1 +/- 0.297)
Wave 4 phase	=	71.155 +/- 4.114

Statistics neglect uncertainties in the data

Ratio of Mean Sq. Err. in wavefit to constant fit = 0.347

Wave phases are first maximum east of 0'E

Wave-4 fit to outbound densities at 150km Phase 2, 10 to 20 'N, constant altitude data, daytime



+ = MGS data, solid line = least squares wave-4 fit,
dotted lines = 1 sigma uncertainty in fit

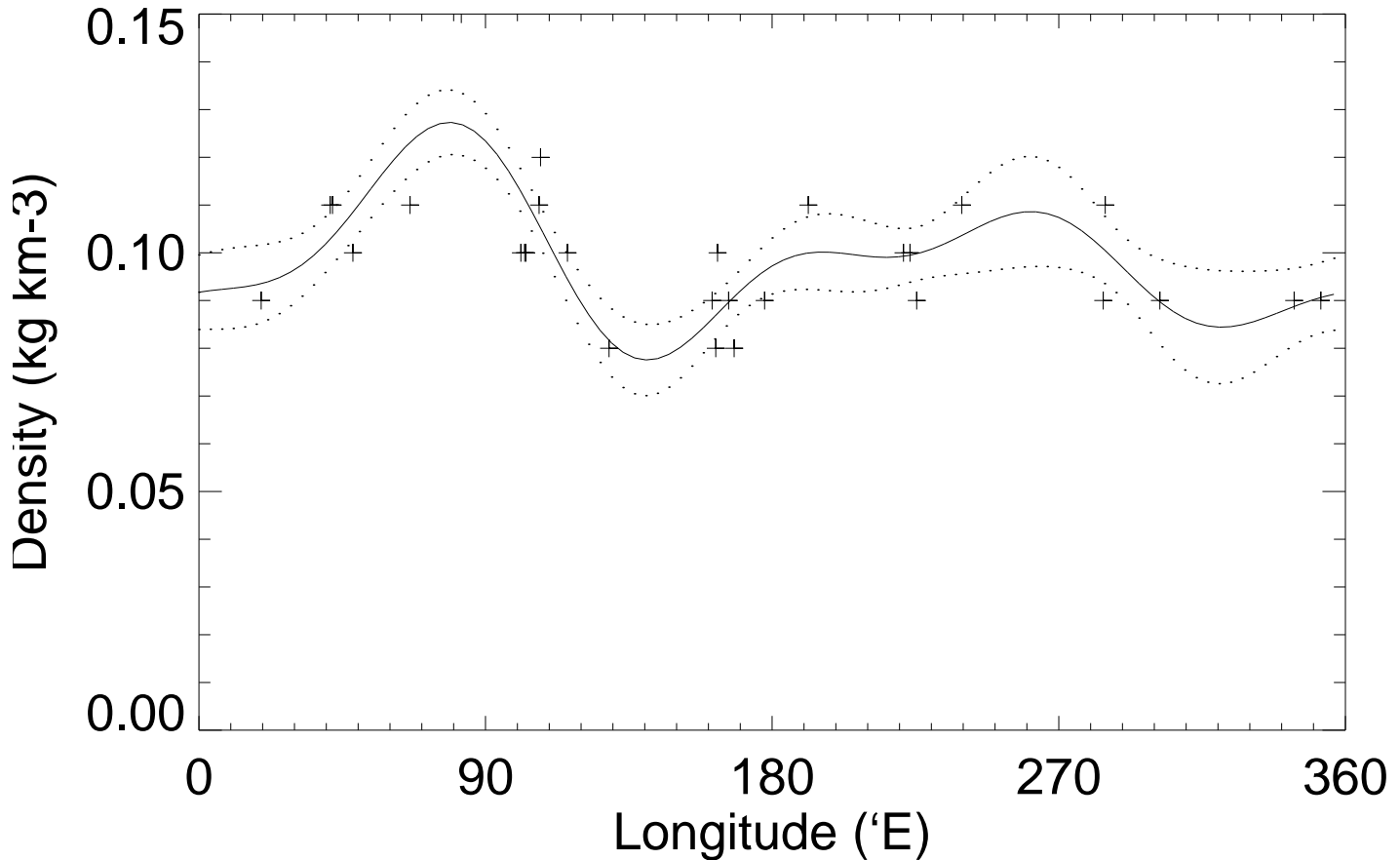
Background density	=	0.241 * (1 +/- 0.023)
Normalized Wave 1 amplitude	=	0.004 * (1 +/- 8.400)
Wave 1 phase	=	56.851 +/- *****
Normalized Wave 2 amplitude	=	0.117 * (1 +/- 0.317)
Wave 2 phase	=	71.867 +/- 9.174
Normalized Wave 3 amplitude	=	0.082 * (1 +/- 0.460)
Wave 3 phase	=	88.287 +/- 8.745
Normalized Wave 4 amplitude	=	0.109 * (1 +/- 0.339)
Wave 4 phase	=	73.748 +/- 4.951

Statistics neglect uncertainties in the data

Ratio of Mean Sq. Err. in wavefit to constant fit = 0.578

Wave phases are first maximum east of 0'E

Wave-4 fit to outbound densities at 160km Phase 2, 10 to 20 'N, constant altitude data, daytime



+ = MGS data, solid line = least squares wave-4 fit,
dotted lines = 1 sigma uncertainty in fit

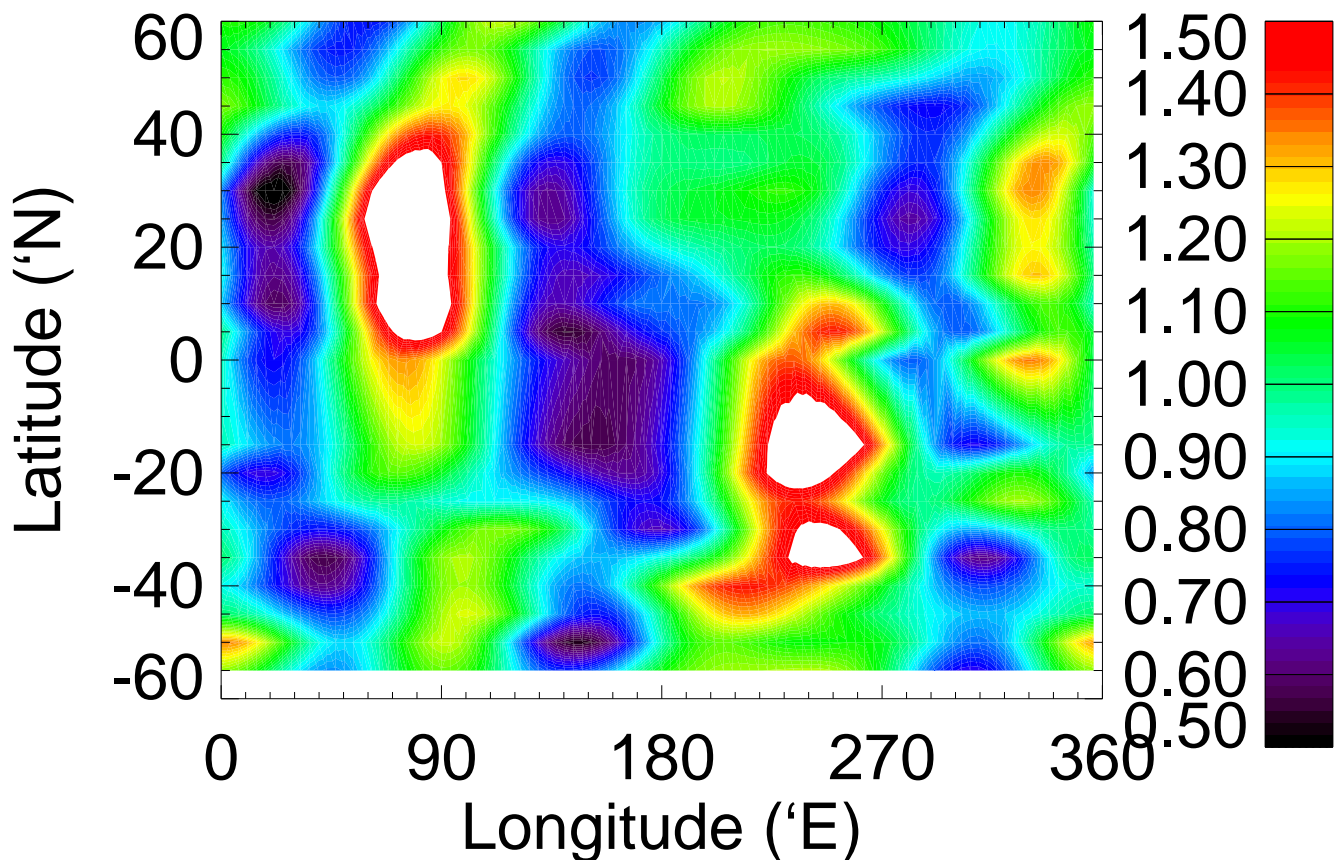
Background density	=	0.099 * (1 +/- 0.023)
Normalized Wave 1 amplitude	=	0.041 * (1 +/- 0.784)
Wave 1 phase	=	78.126 +/- 46.081
Normalized Wave 2 amplitude	=	0.150 * (1 +/- 0.261)
Wave 2 phase	=	67.429 +/- 7.440
Normalized Wave 3 amplitude	=	0.055 * (1 +/- 0.733)
Wave 3 phase	=	76.285 +/- 13.659
Normalized Wave 4 amplitude	=	0.067 * (1 +/- 0.607)
Wave 4 phase	=	86.381 +/- 7.565

Statistics neglect uncertainties in the data

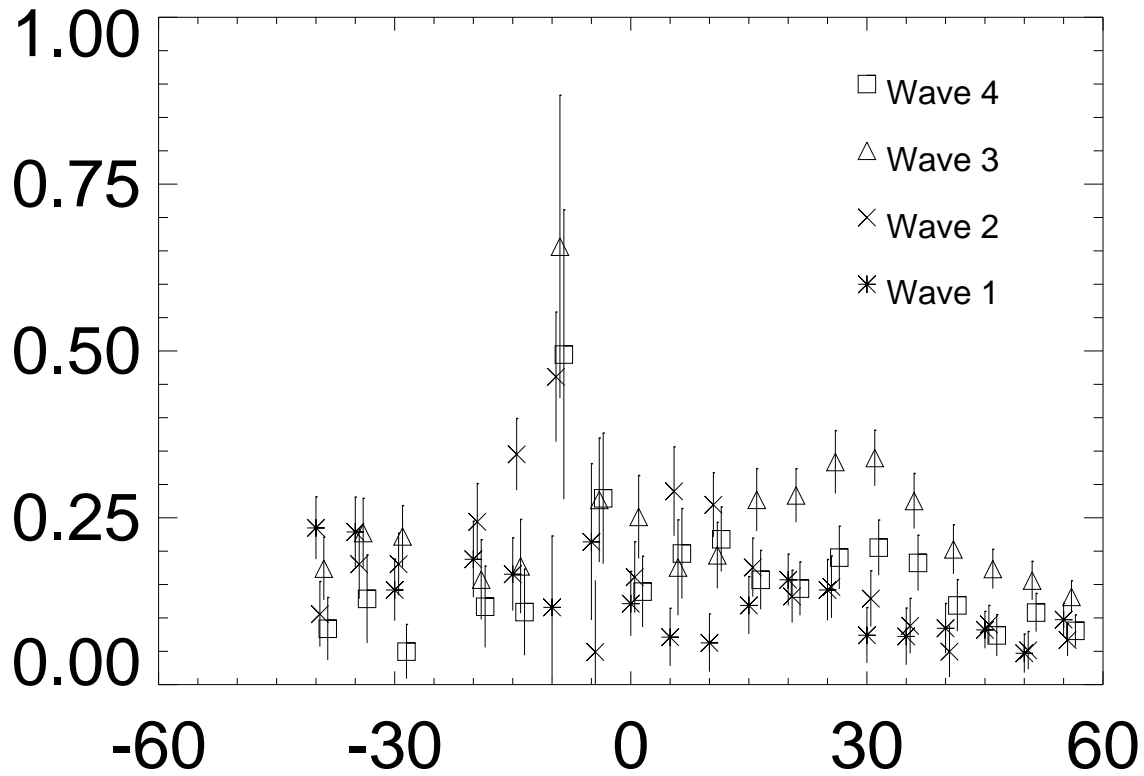
Ratio of Mean Sq. Err. in wavefit to constant fit = 0.421

Wave phases are first maximum east of 0'E

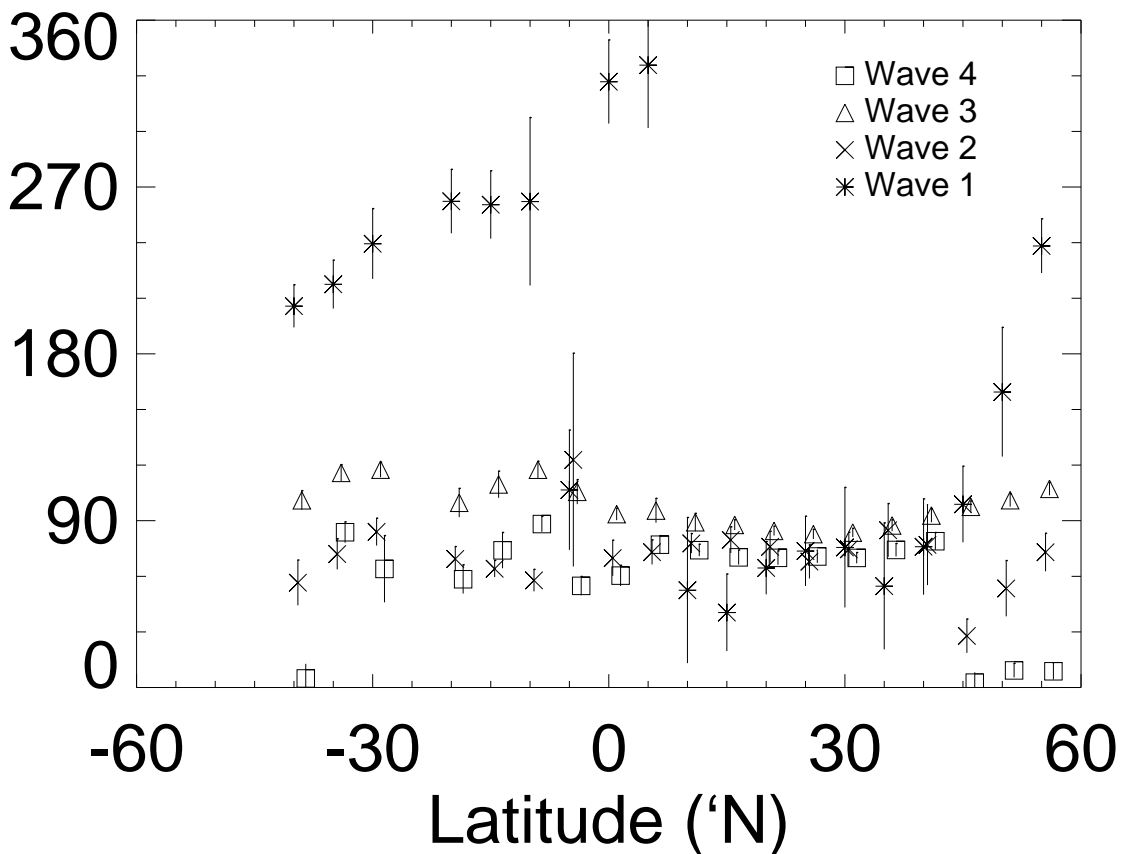
Fitted density ratioed to mean fitted density
Phase 2, outbound, daytime, 130km



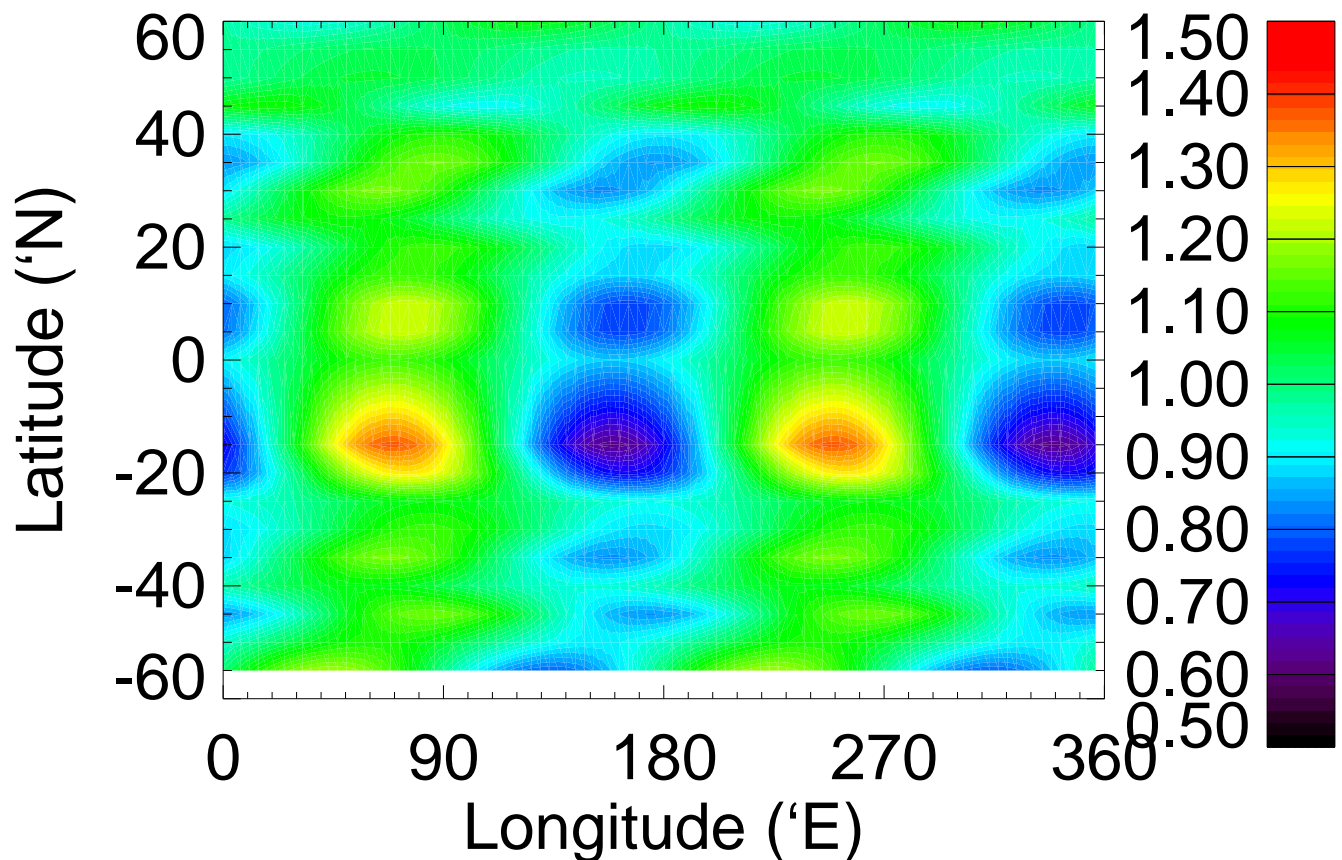
Normalized Wave Amplitudes Outbound, 130 km, Phase 2, Daytime



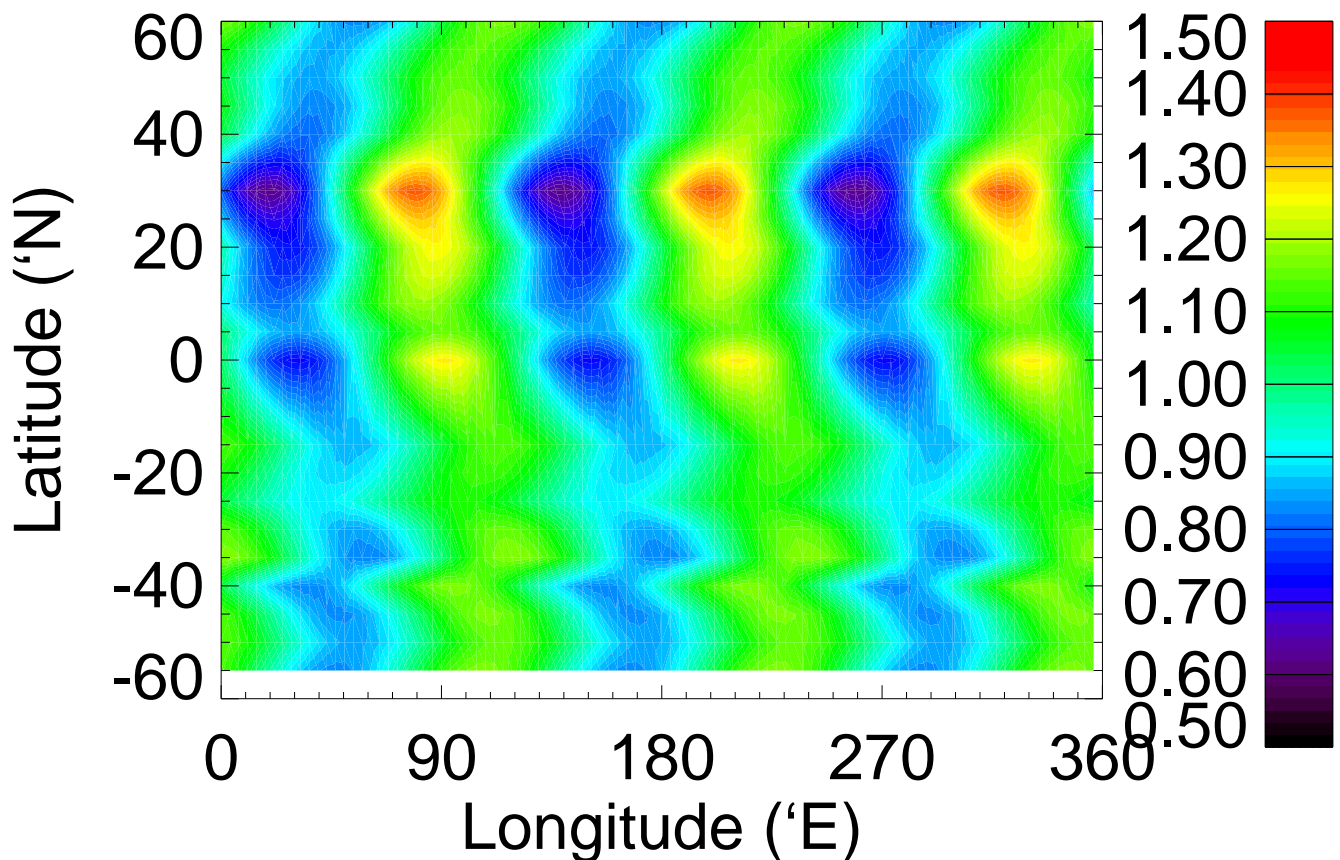
Wave Phases Outbound, 130 km, Phase 2, Daytime



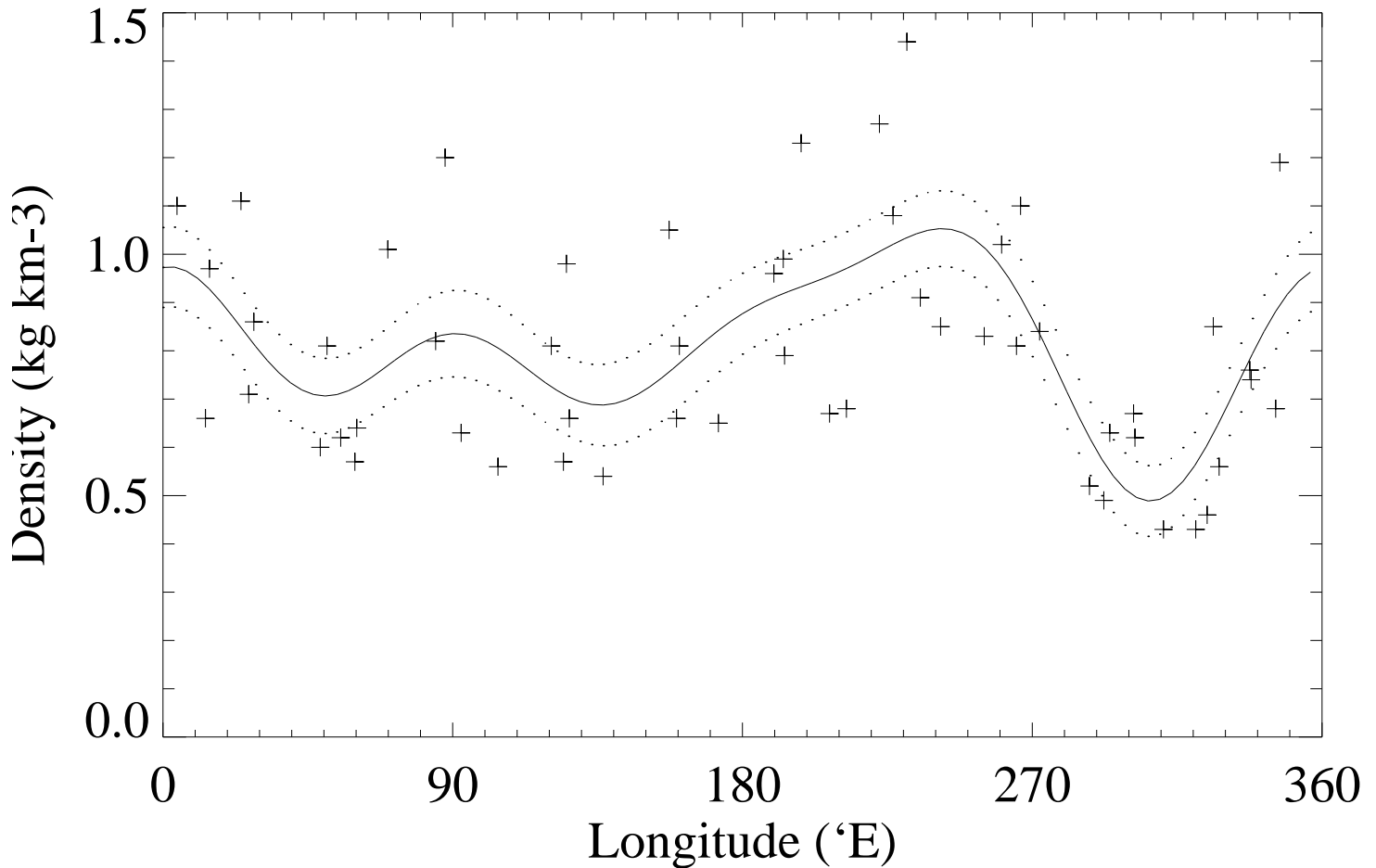
Fitted density ratioed to mean fitted density
W2, Phase 2, outbound, daytime, 130km



Fitted density ratioed to mean fitted density
W3, Phase 2, outbound, daytime, 130km



Wave-4 fit to outbound densities at 130km Phase 2, -70 to -50 'N, constant altitude data, daytime



+ = MGS data, solid line = least squares wave-4 fit,
dotted lines = 1 sigma uncertainty in fit

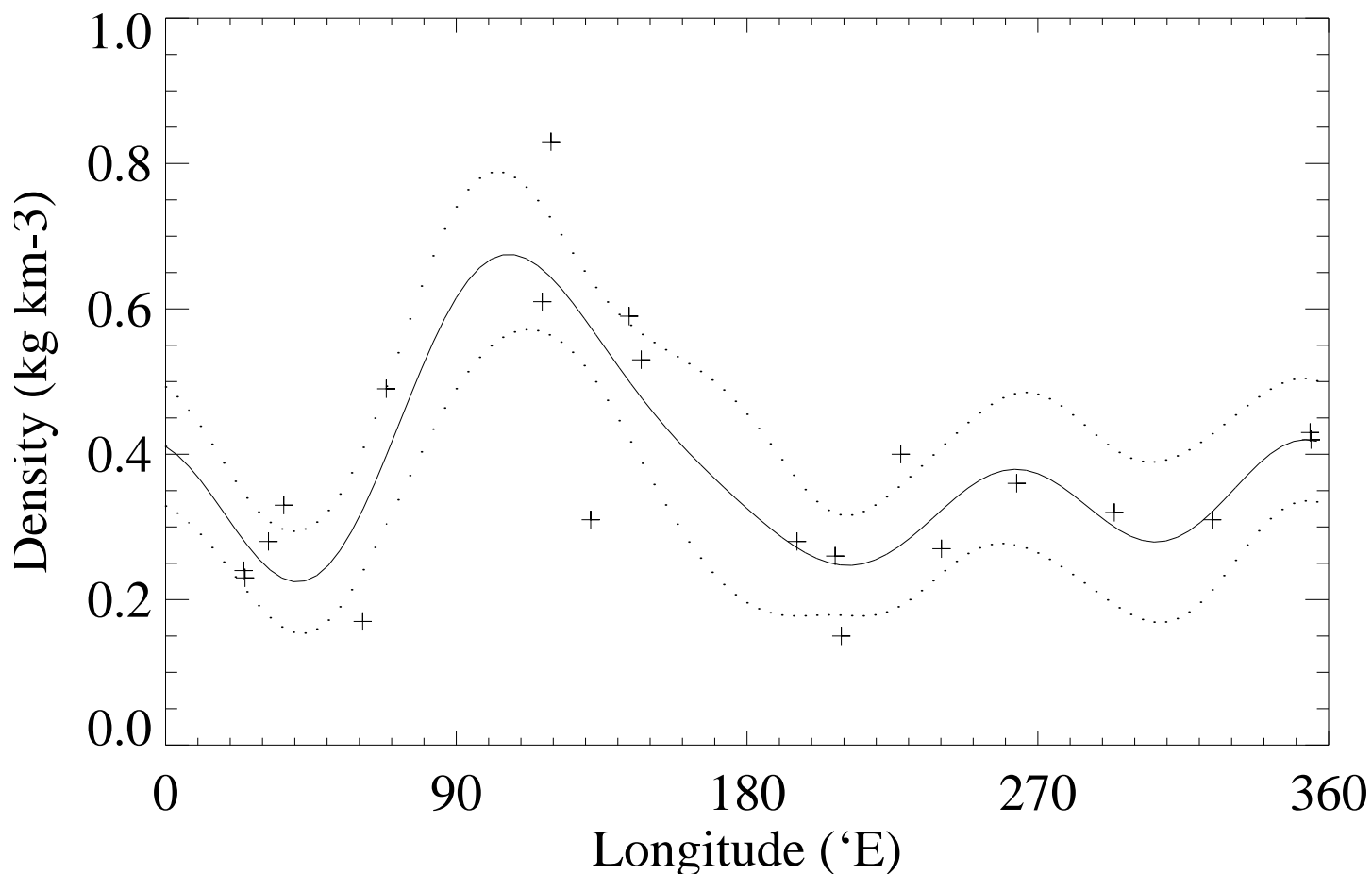
Background density = $0.810 * (1 \pm 0.033)$
 Normalized Wave 1 amplitude = $0.083 * (1 \pm 0.565)$
 Wave 1 phase = $207.105 * (1 \pm 0.156)$
 Normalized Wave 2 amplitude = $0.168 * (1 \pm 0.271)$
 Wave 2 phase = $37.091 * (1 \pm 0.220)$
 Normalized Wave 3 amplitude = $0.134 * (1 \pm 0.347)$
 Wave 3 phase = $117.282 * (1 \pm 0.057)$
 Normalized Wave 4 amplitude = $0.101 * (1 \pm 0.478)$
 Wave 4 phase = $85.404 * (1 \pm 0.075)$

Statistics neglect errors in the data

Ratio of Mean Sq. Err. in wavefit to constant fit = 0.589

Wave phases are first maximum east of 0'E

Wave-4 fit to inbound densities at 130km Phase 2, -70 to -50 'N, constant altitude data, nighttime



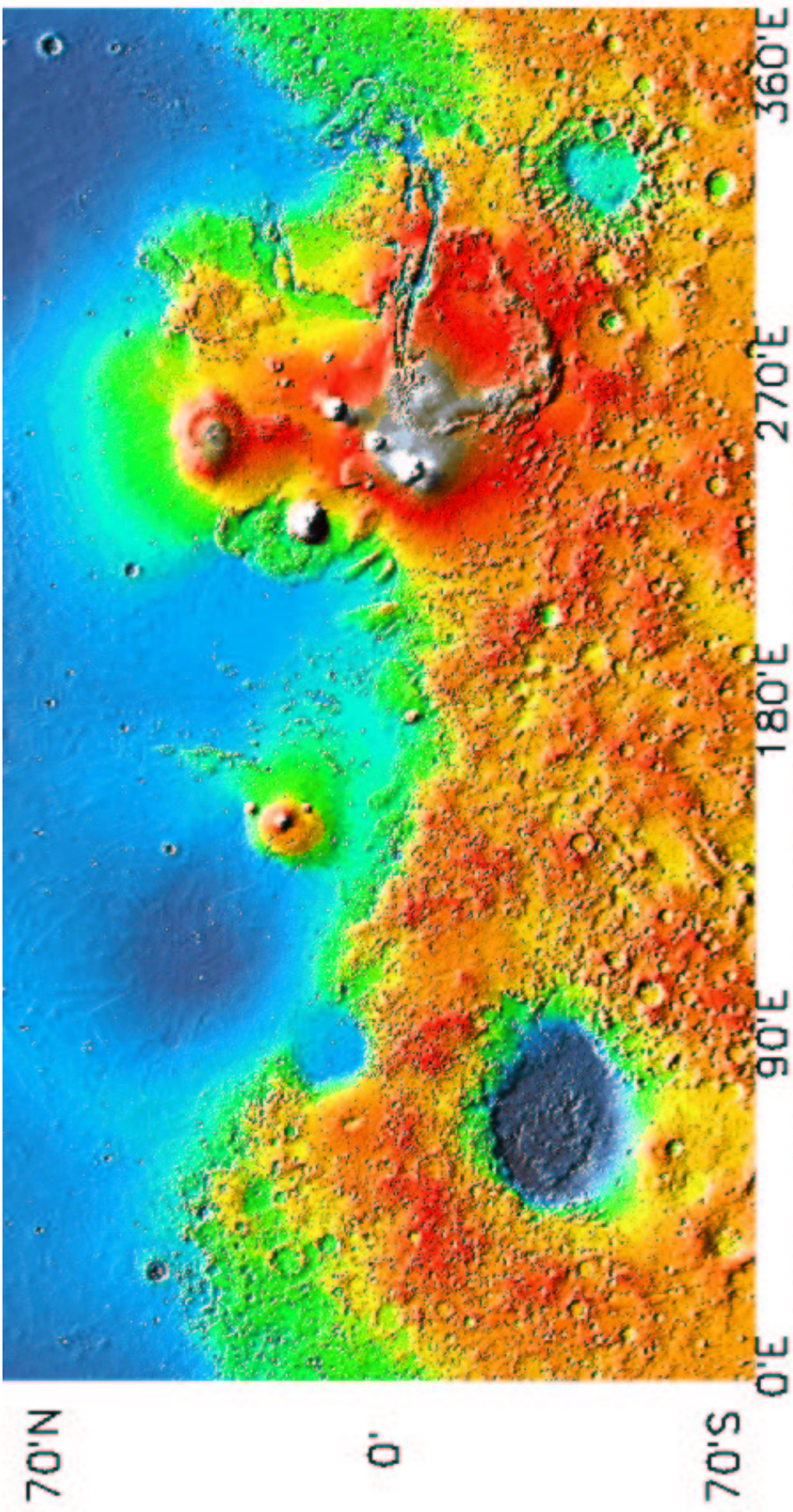
+ = MGS data, solid line = least squares wave-4 fit,
dotted lines = 1 sigma uncertainty in fit

Background density	=	0.383 * (1 +/- 0.086)
Normalized Wave 1 amplitude	=	0.275 * (1 +/- 0.456)
Wave 1 phase	=	107.722 * (1 +/- 0.225)
Normalized Wave 2 amplitude	=	0.280 * (1 +/- 0.409)
Wave 2 phase	=	116.976 * (1 +/- 0.106)
Normalized Wave 3 amplitude	=	0.202 * (1 +/- 0.582)
Wave 3 phase	=	114.827 * (1 +/- 0.094)
Normalized Wave 4 amplitude	=	0.126 * (1 +/- 1.103)
Wave 4 phase	=	88.931 * (1 +/- 0.128)

Statistics neglect errors in the data

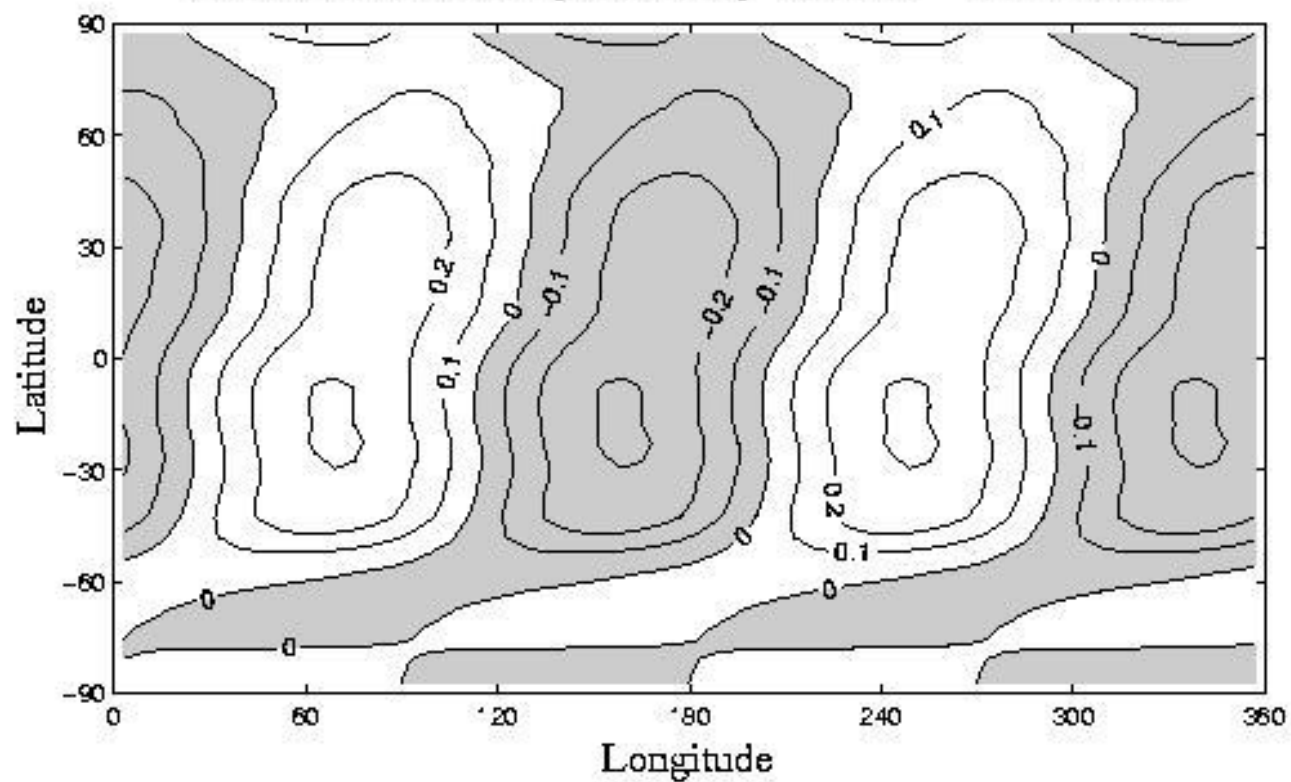
Ratio of Mean Sq. Err. in wavefit to constant fit = 0.361

Wave phases are first maximum east of 0'E



Smith, Zuber, et al topography, Science, 1999

MGCM S=2 Density Anomaly 1500 LT Z= 115 km



MGCM S=3 Density Anomaly 1500 LT Z= 115 km

