

**Properties of WMAP cross-
sections in the field of the
RATAN-600 survey**

M.L.Khabibullina, SAO

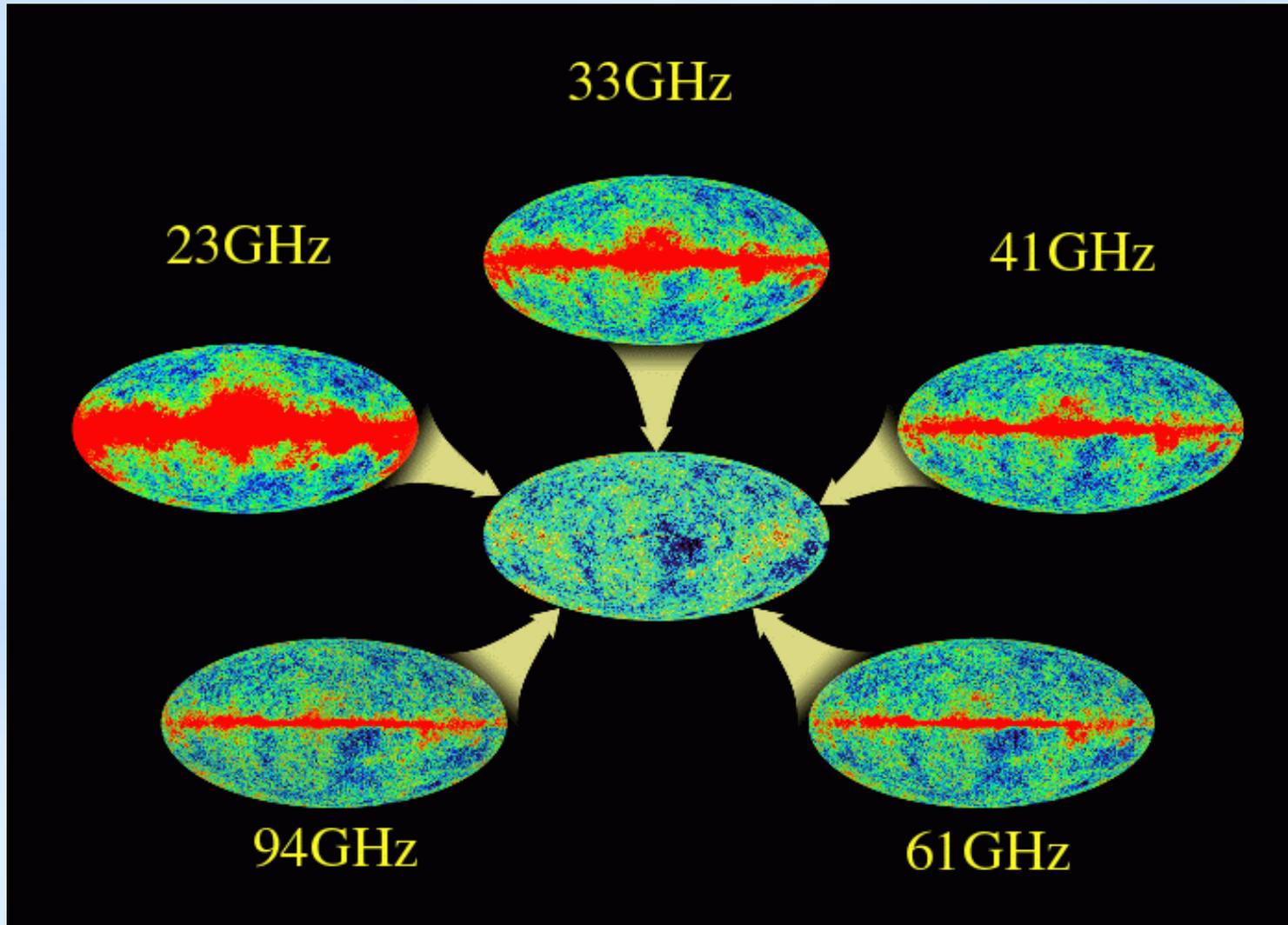
ИССЛЕДОВАНИЕ ОДНОМЕРНЫХ СЕЧЕНИЙ КАРТ WMAP И NVSS

Хабибуллина М.А., Верходанов О.В., Майорова Е.К.,
Парийский Ю.Н.

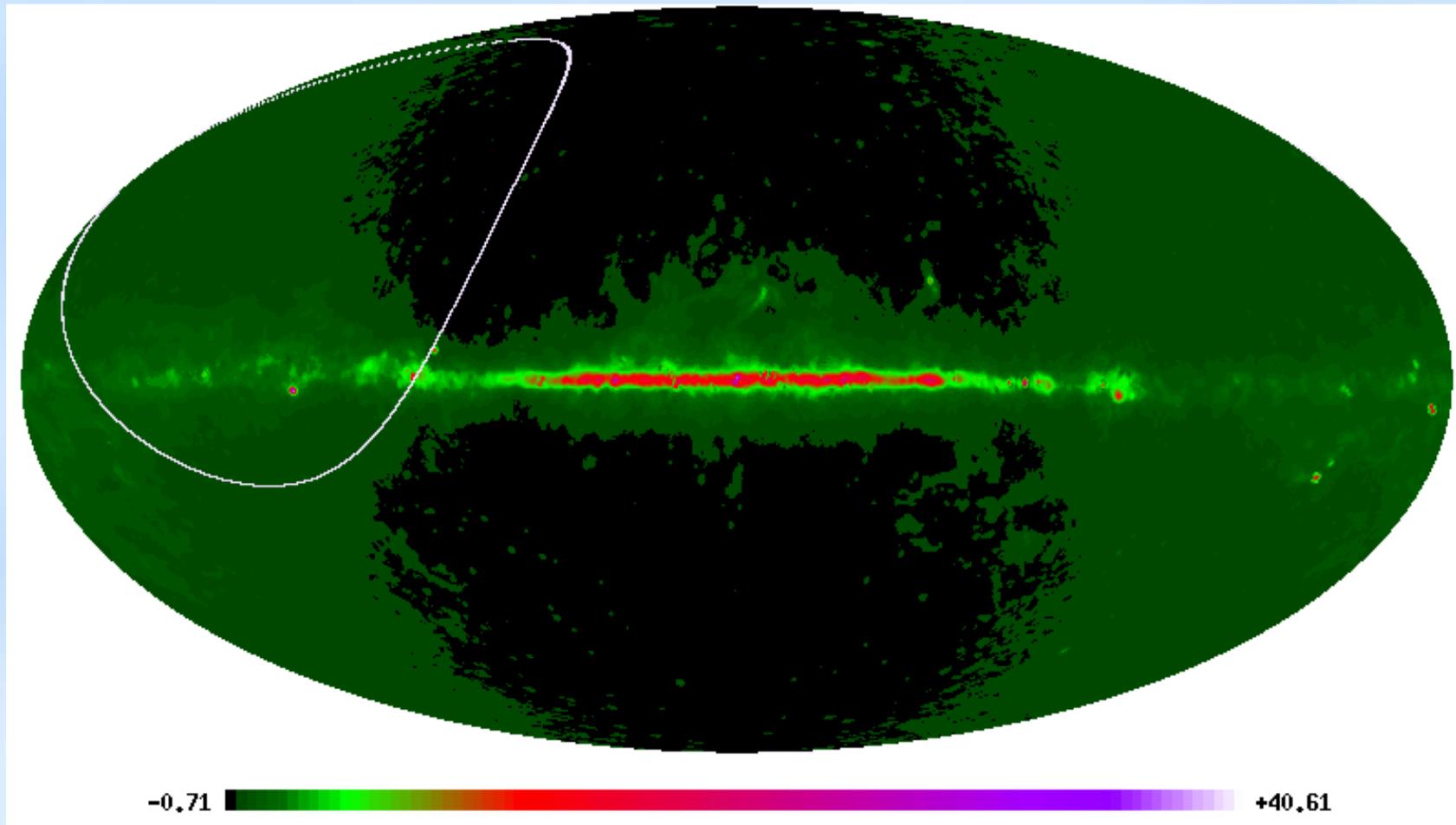
Two stages of our correlation researches are considered

1. Study of correlation of 1-dim sections of CMB and FGDs
2. Study of correlation of 1-dim sections of CMB and NVSS

Component separation for production of ILC CMB map



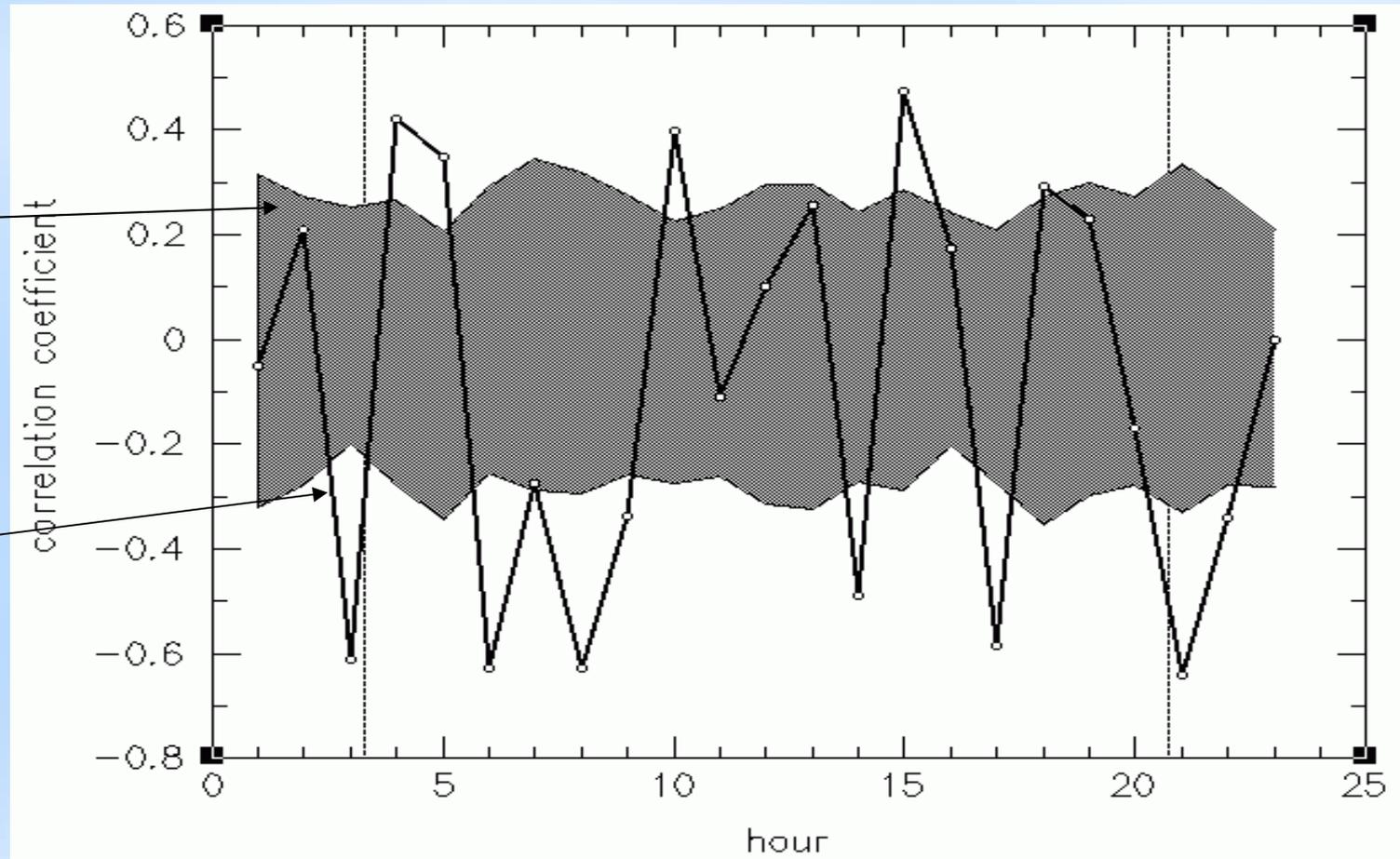
RZF (RATAN-600 Zenith Field) survey (the white ring strip, $\sim 41^\circ$) on the synchrotron map in Galactic coordinates



The correlation coefficients for synchrotron for 1-hour bins

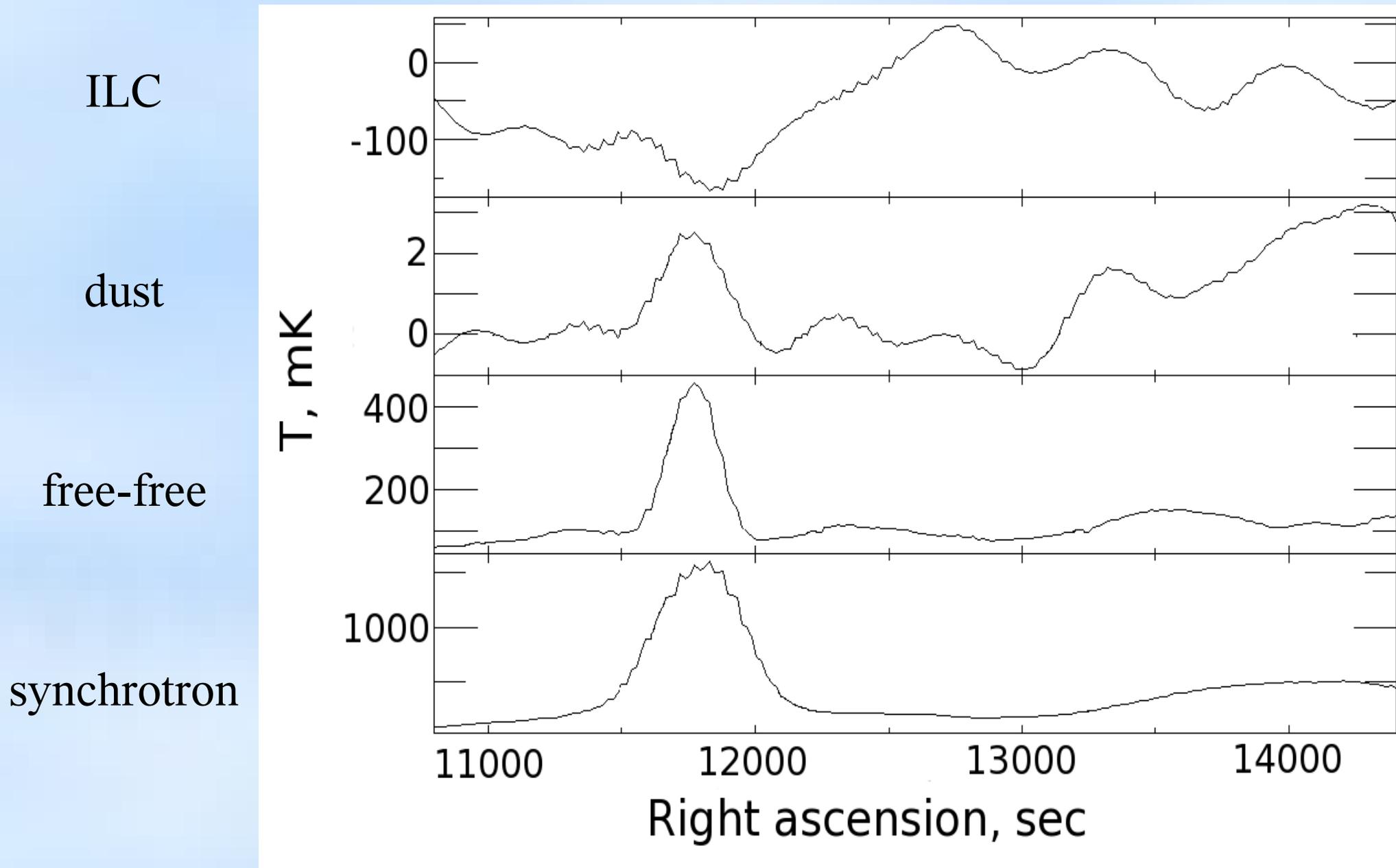
Model of CDM with
admissible levels of
variation

ILC



The thick vertical line shows the intersection with the Milky Way. The solid line shows the correlation between the ILC and the corresponding background component. To estimate admissible interval of cross-correlation coefficient value, we simulated 100 LSDM models. This is shown with grey colour.

Section of the studied field located in the Galactic plane
(maximal peak in 3 lower figures)

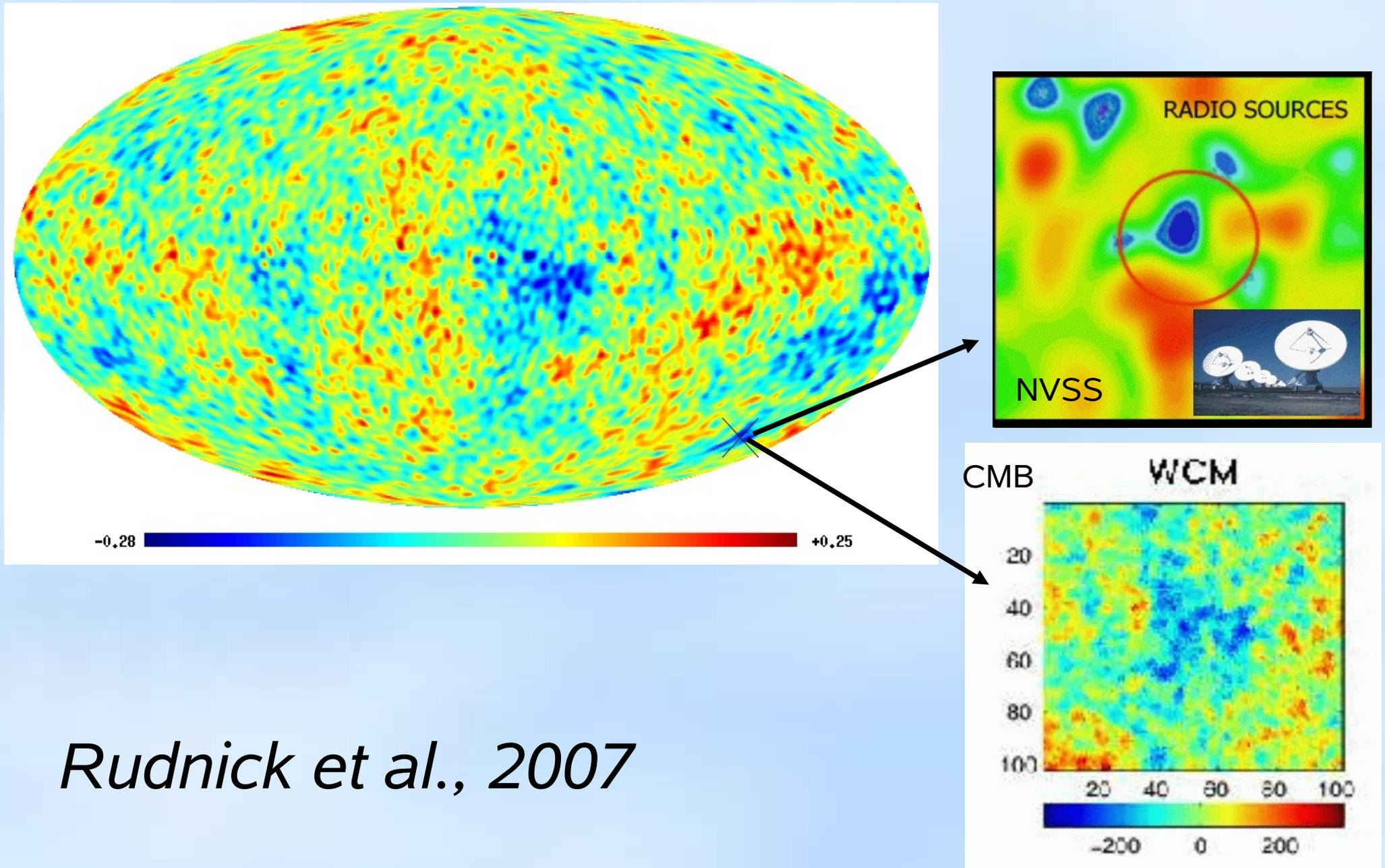


Two stages of our correlation researches are considered

1. Study of correlation of 1-dim sections of CMB and FGDs

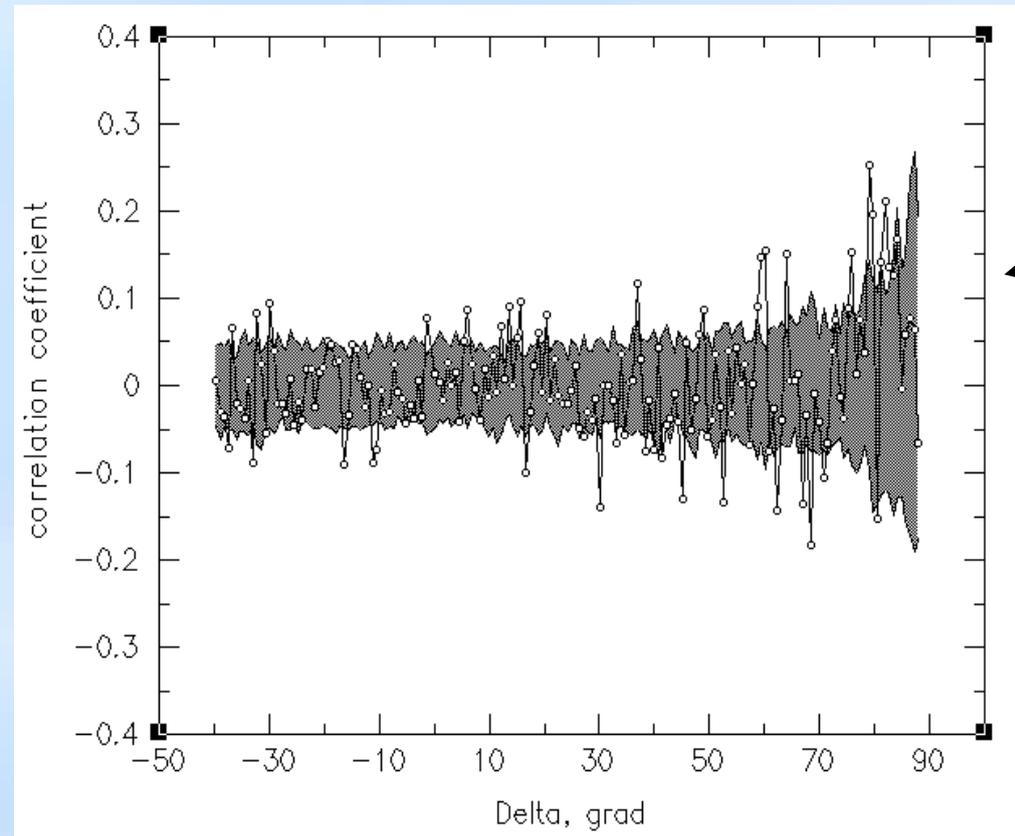
2. Study of correlation of 1-dim sections of CMB and NVSS

Cold Spot in CMB and NVSS

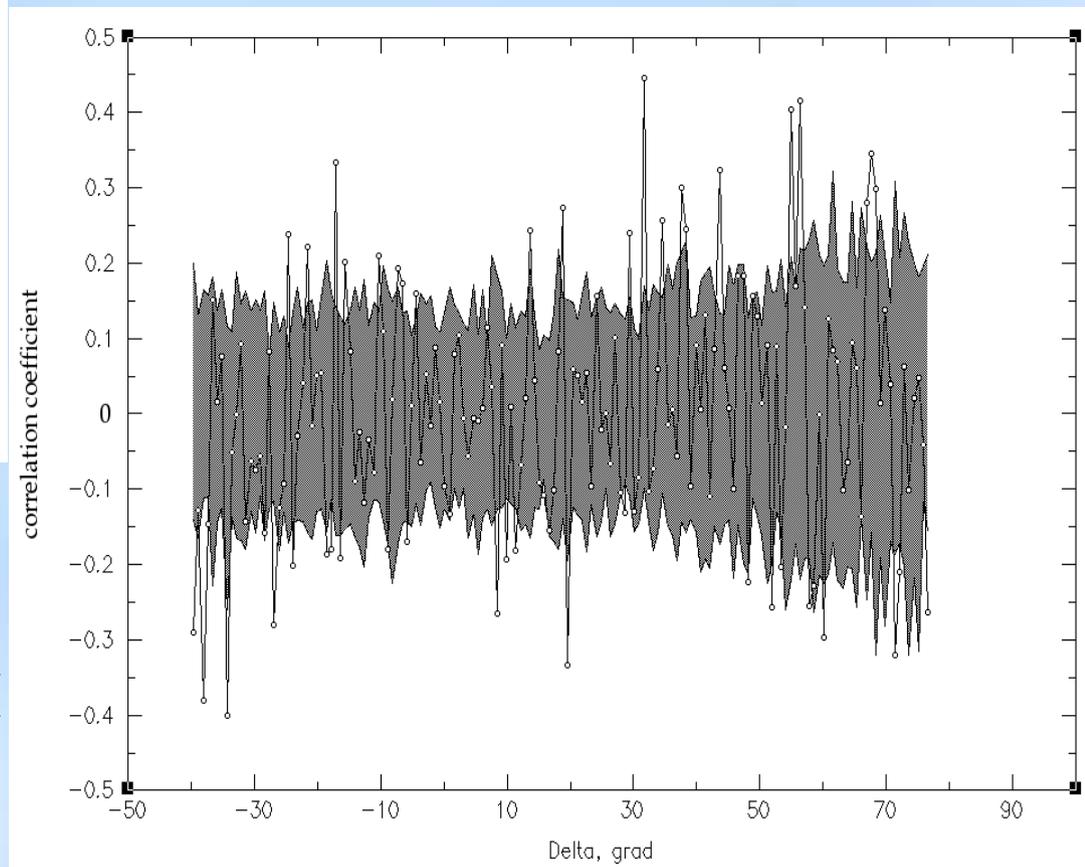


Rudnick et al., 2007

We divided the ILC map with sections of different resolutions at scales of 0.75, 3, 4.5, 6.75 and 9.75 degrees.

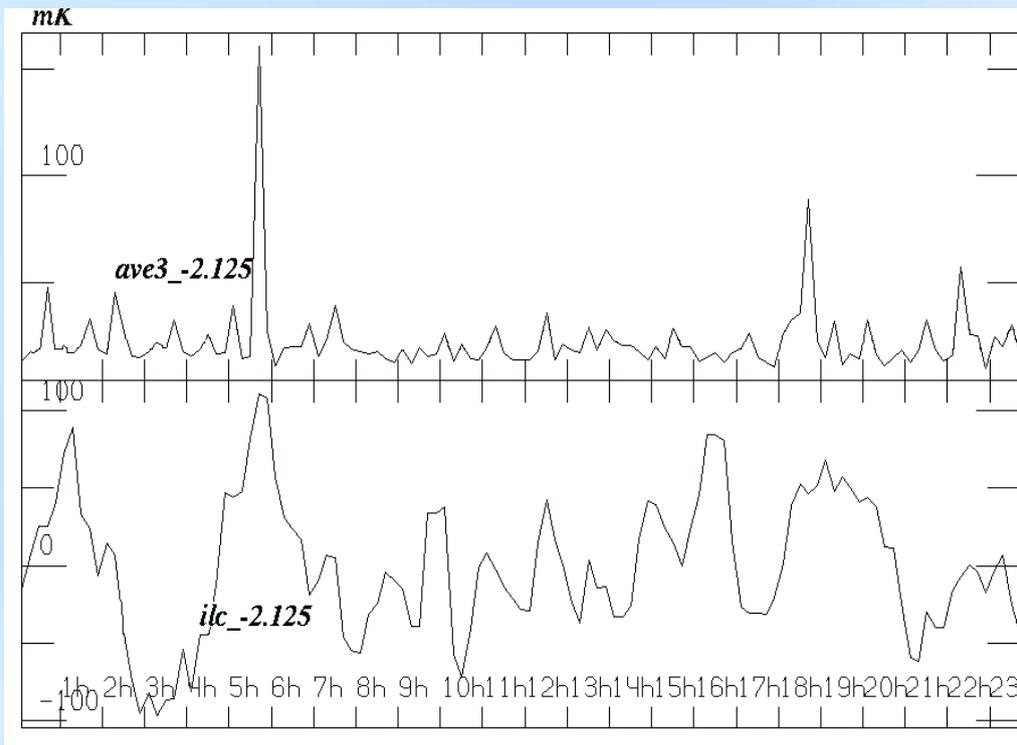


**For scales 0.75
and 6.75 grad**



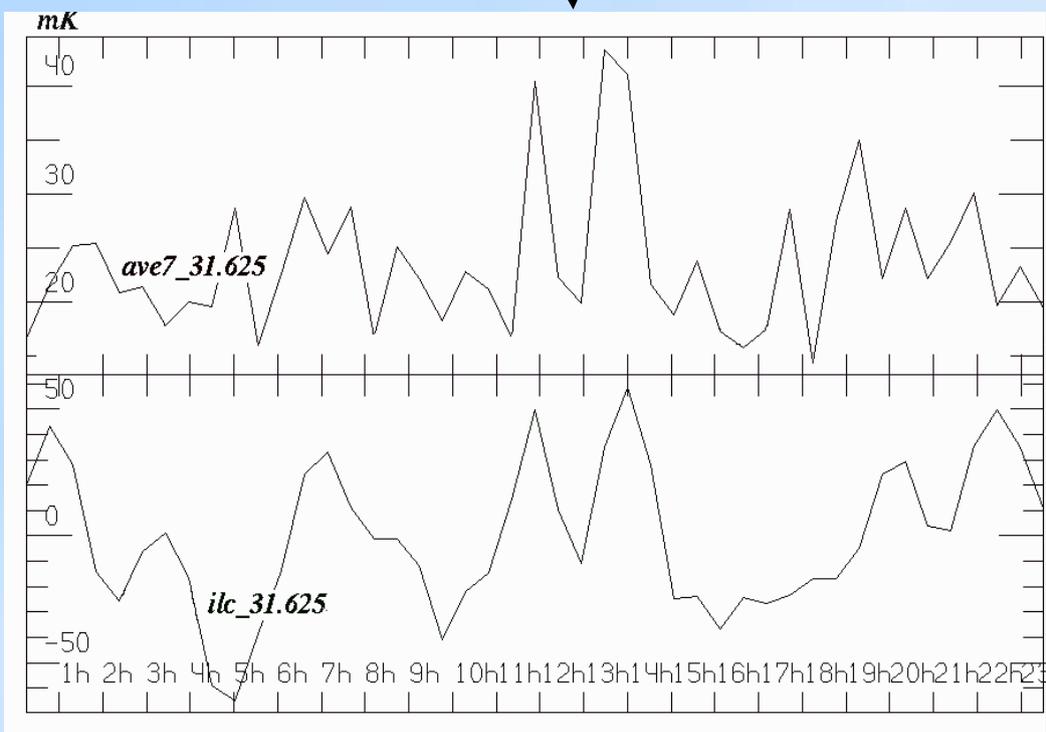
Correlation coefficient values overlaid on the simulated ones using 50 LCDM models and shown with a grey colour

Examples of 1-dim sections of highest correlation between WMAP CMB data and NVSS data



Scale 3 grad,
declaration -2.125

Scale 6.75 grad,
declaration 31.625



CONCLUSIONS

- 1) We apply the method of searching for correlations in one-dimensional sections of WMAP background-radiation maps. We find, in particular, the WMAP map sections at the declination of $\delta = 41^\circ$ to contain a signal that is correlated and anticorrelated with the data for the component to be separated.
- 2) The results obtained corroborate the hypothesis about the non-Gaussian structure of the ILC map in one-dimensional scans.
- 3) We demonstrate that the simple and non computer-intensive method of correlation search can be used to qualitatively verify in the one-dimensional case the map of the signal identified.
- 4) Results of search for spots will be demonstrated in forthcoming paper.

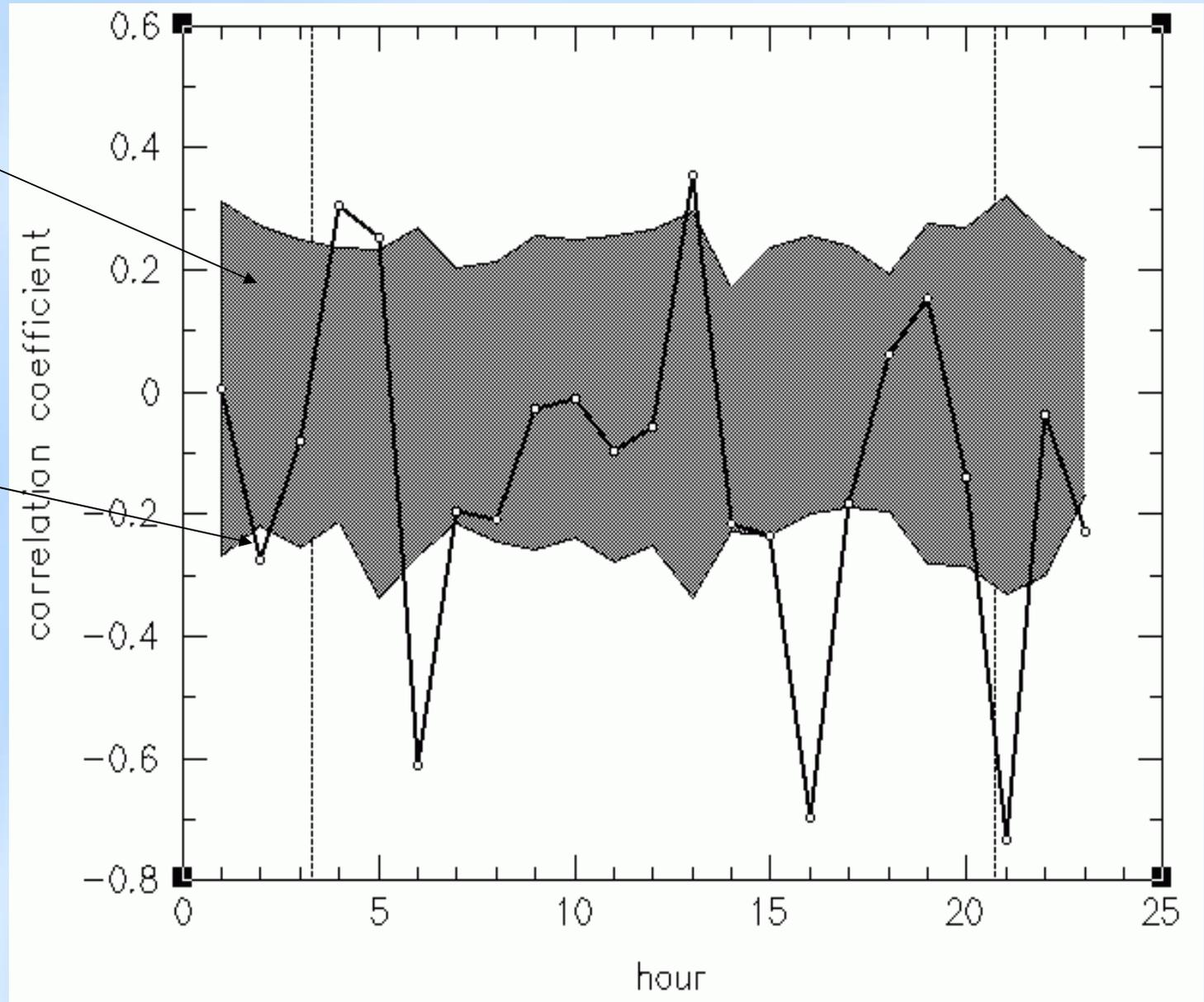


Thank you for attention

The correlation coefficients for dust for 1-hour bins

Model of CDM with
admissible levels of
variation

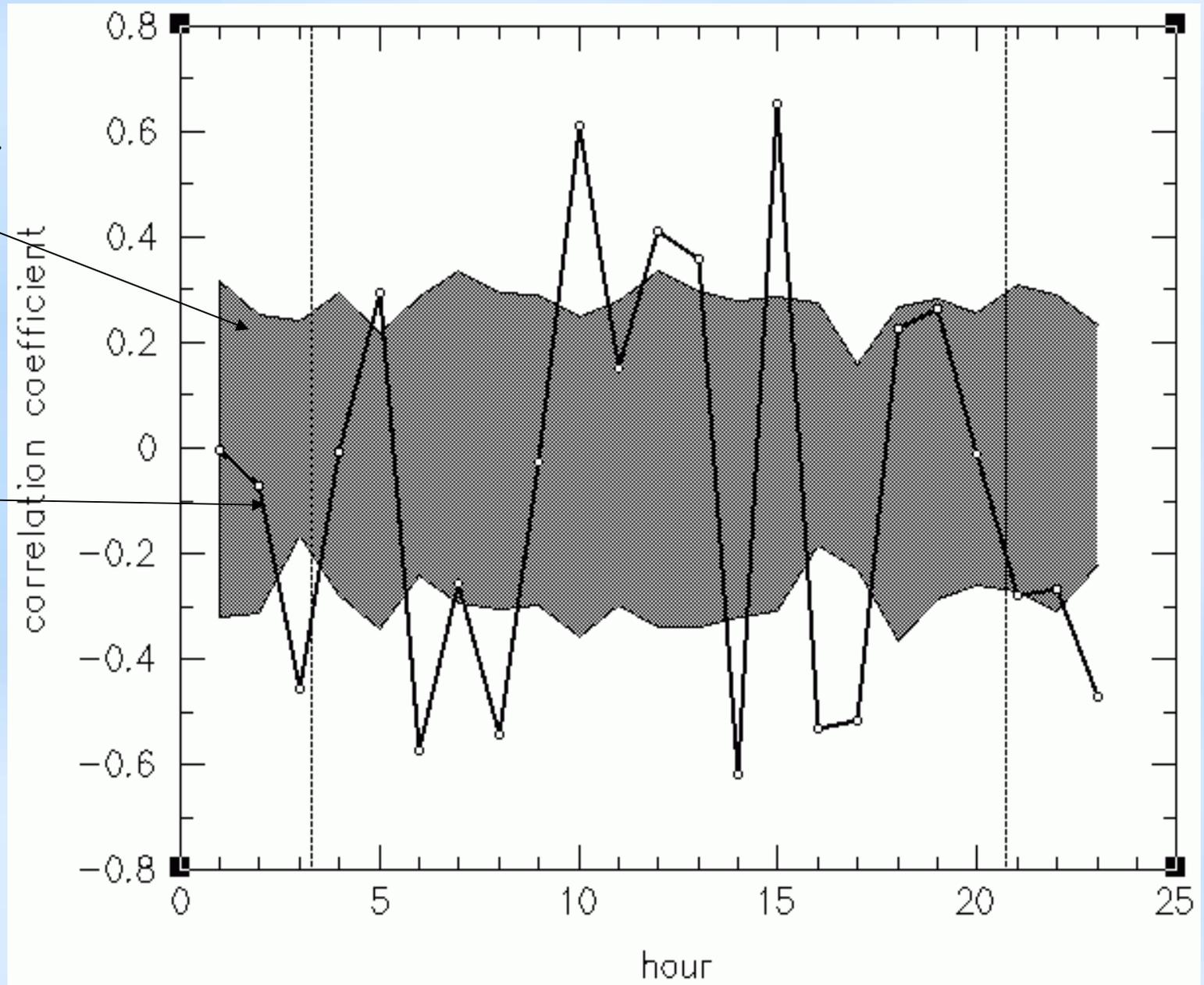
ILC



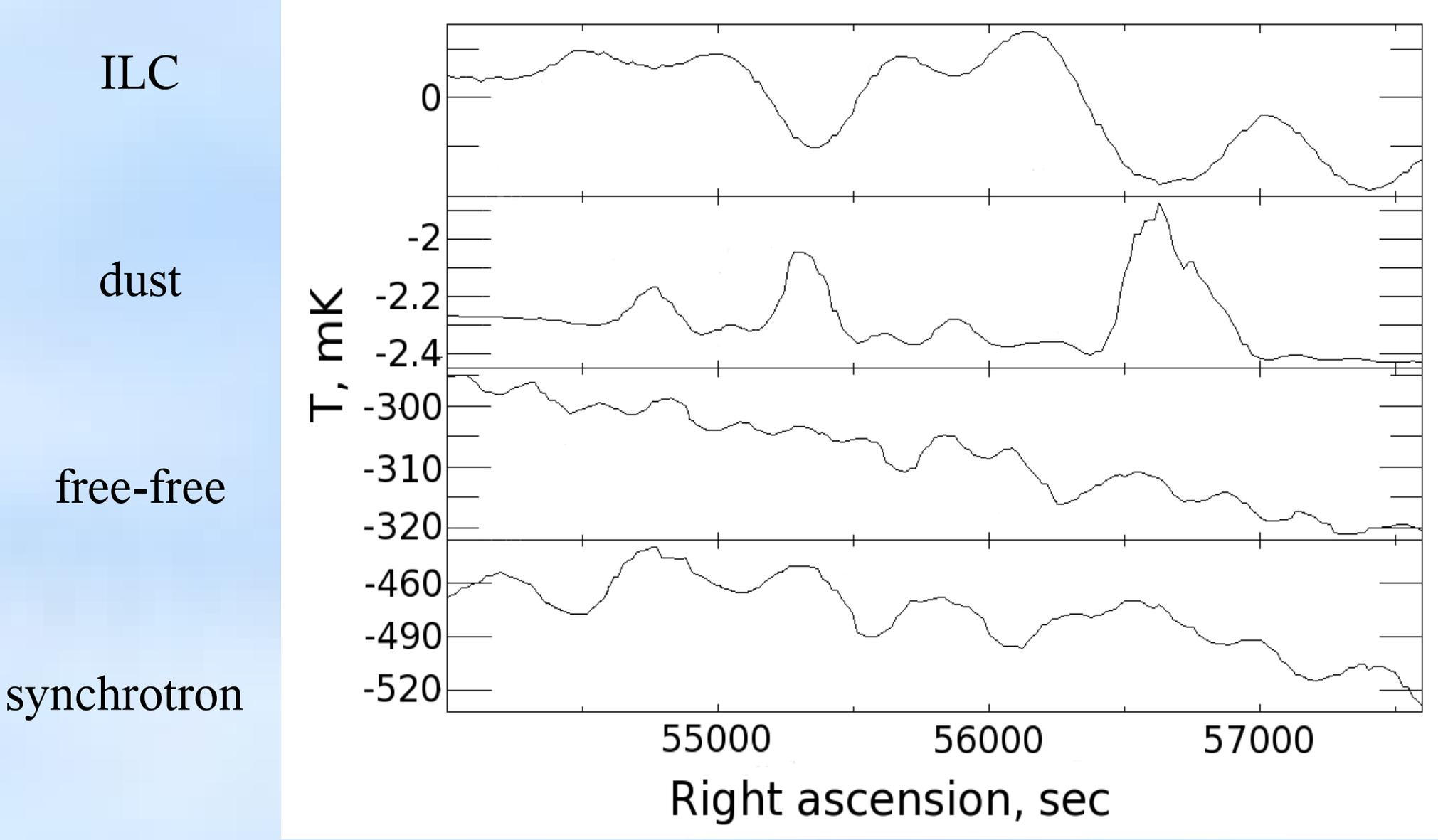
The correlation coefficients for free-free radiation for 1-hour bins

Model of CDM with
admissible levels of
a variation

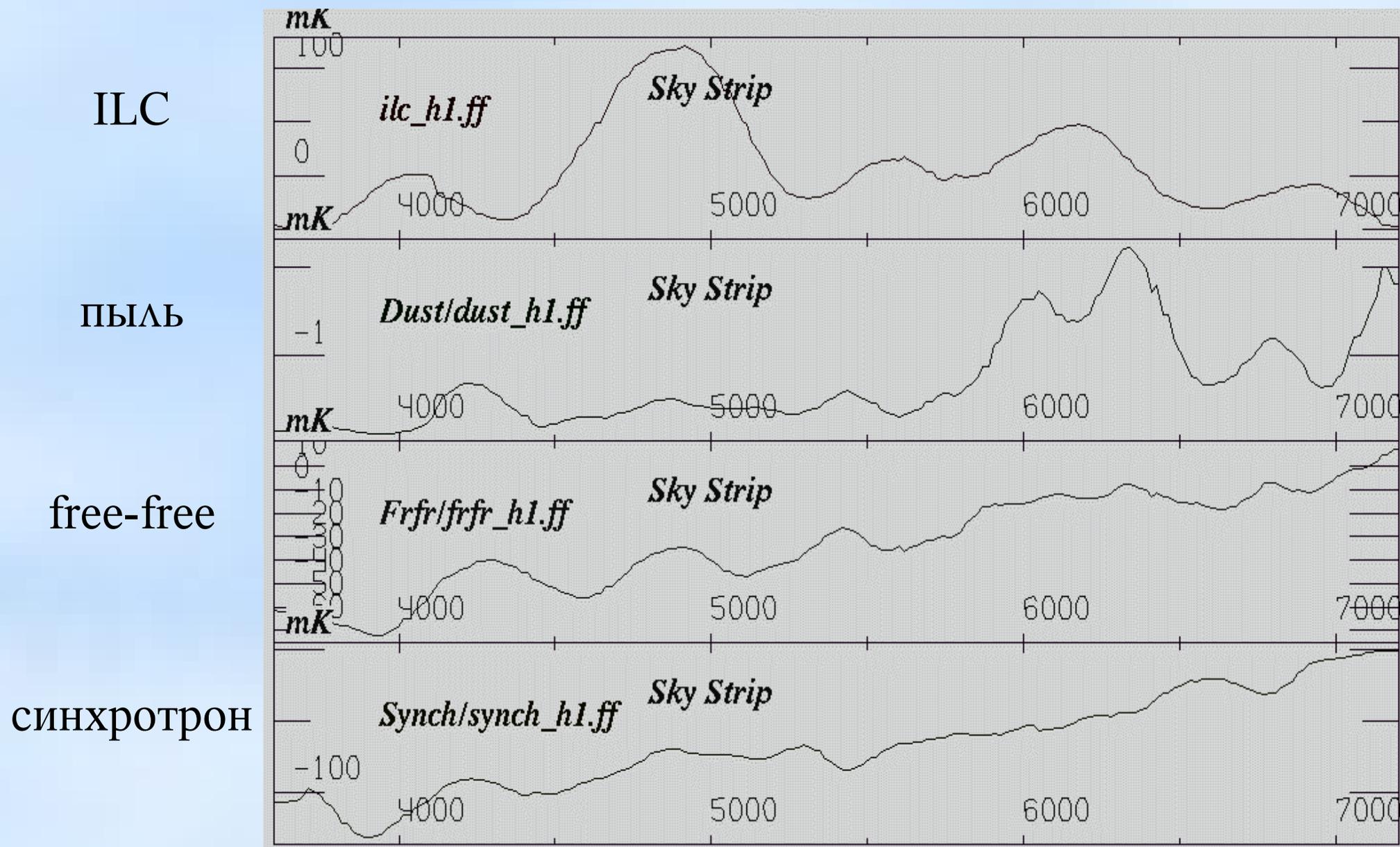
ILC



Section of the domains located outside the Galactic plane



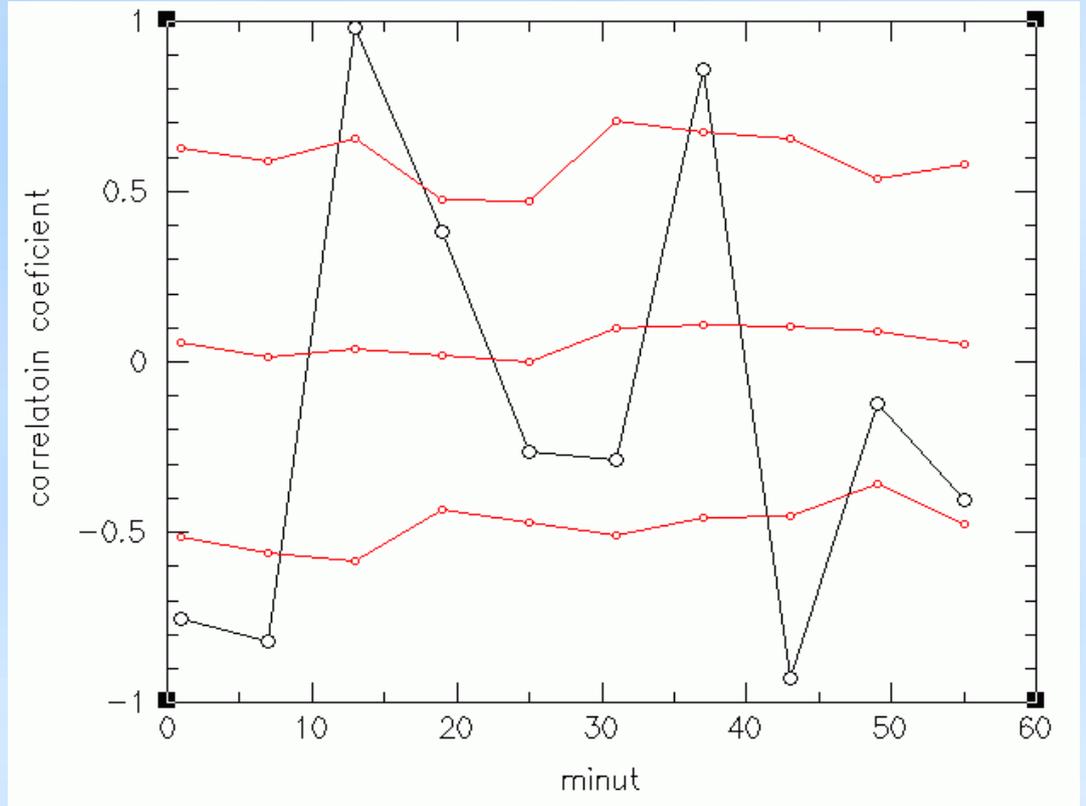
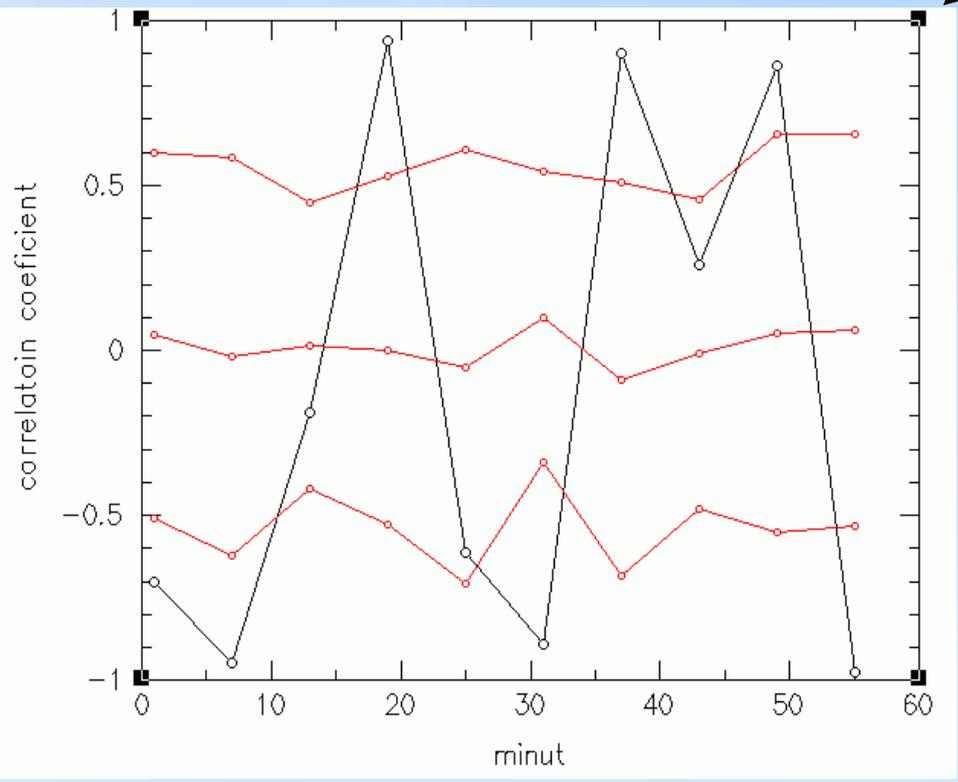
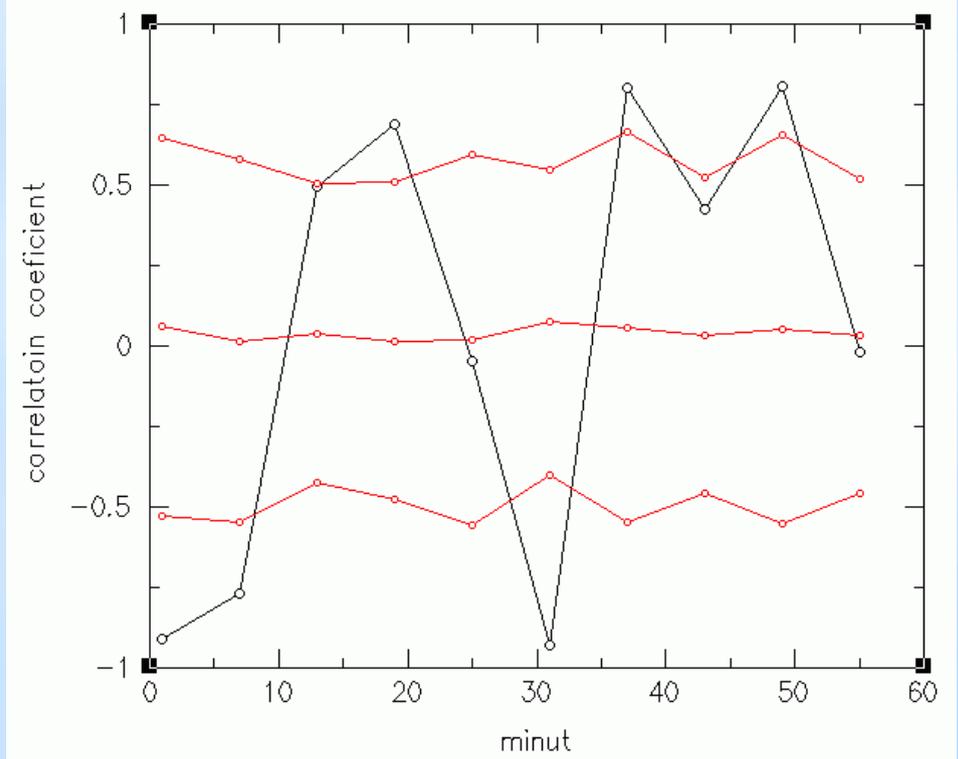
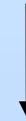
Best section

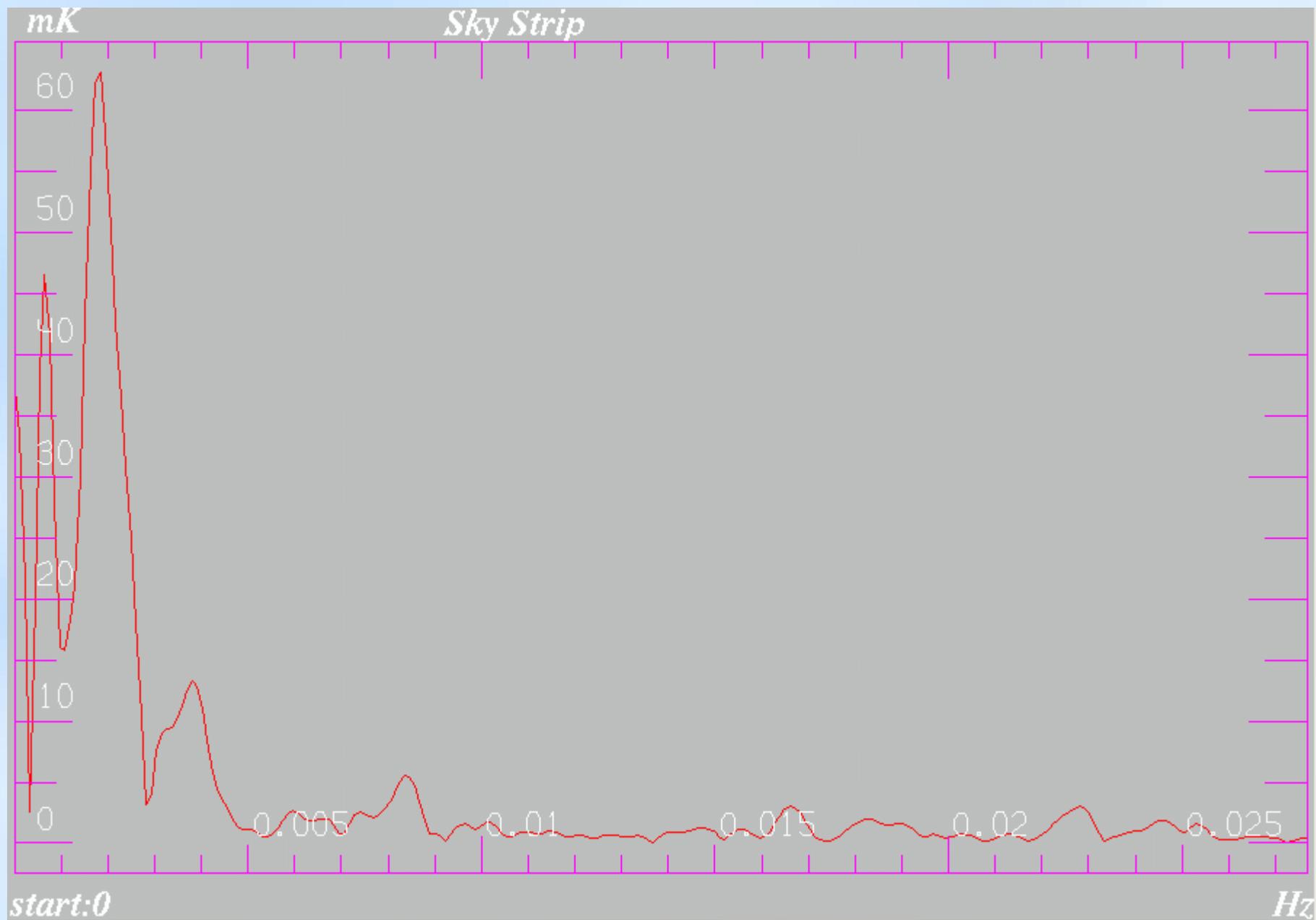


Корреляционные коэффициенты для первого часа:



ПЫЛЬ
free-free
синхротрон





Спектр мощности

