# REMOVAL OF EXTERNAL FIELD CONTRIBUTIONS IN GROUND OBSERVATORY DATA: REVISED OBSERVATORY MONTHLY MEANS

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Monthly means of the magnetic field measurements taken by ground observatories are a useful data source for studying temporal changes of the core magnetic field. However, the usual way of calculating monthly means as the arithmetic mean of all days (geomagnetic quiet as well as disturbed) and all local times (day and night) may result in contributions of external (magnetospheric and ionospheric) origin in the monthly means. Such a contamination makes monthly means less favorable for core field studies.
We investigate this by calculating modified monthly means from observatory hourly means using different statistical approaches (arithmetic mean vs. robust mean), data selection criteria (all days vs. quiet days only), and after removal of external field predictions. An assessment of the different approaches is done by means of generalized cross-validation (GCV). Our revised monthly means are significantly less contaminated by external fields compared to the traditional monthly means.

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