

Seismic 2019

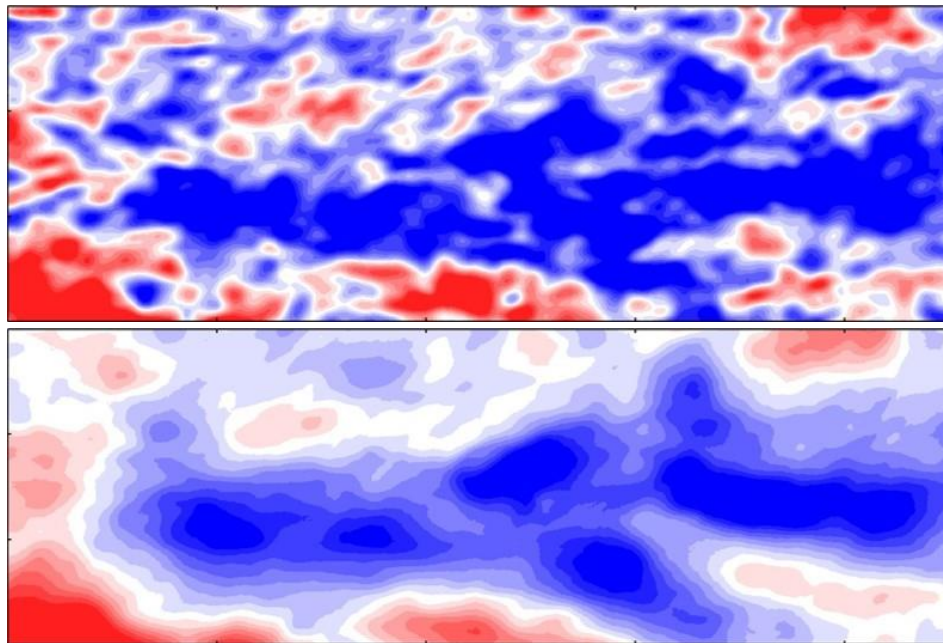
4D monitoring enhancement with LostCor filtering

A case study

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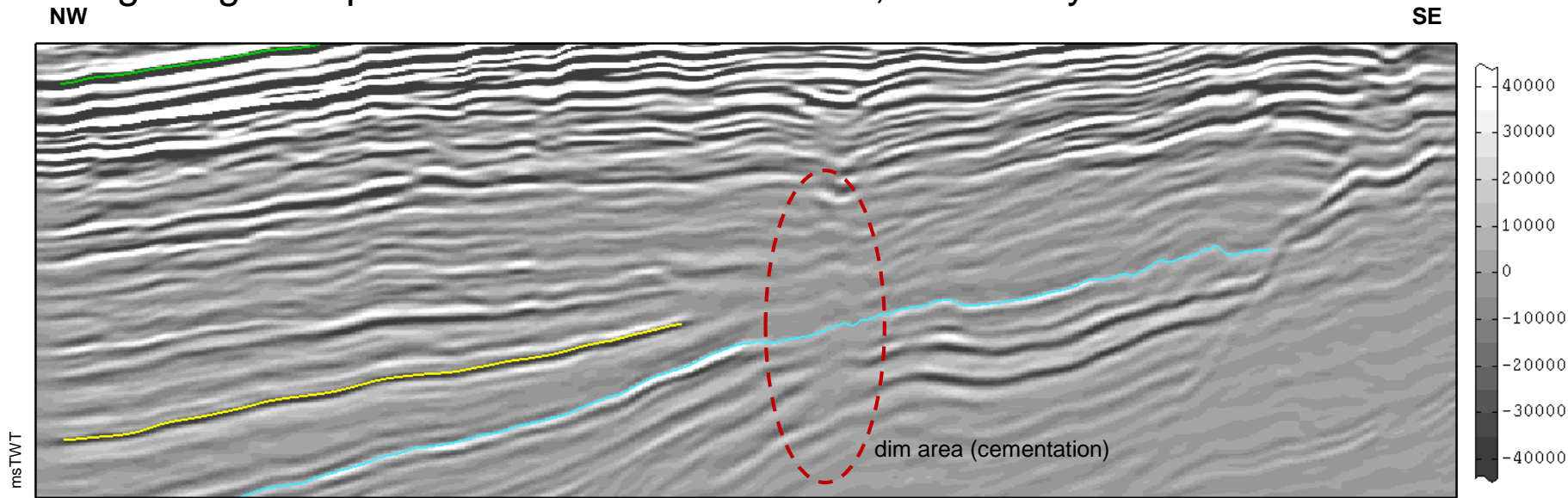


4D RMS difference before (top) & after (bottom) filtering – Time-slice display

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Case study highlights

- 2 full stack seismic volumes over an area of ~600km²: base and monitor surveys acquired with an 8 years interval
- 4 regional interpretations
- other geological input: located cemented zones, coherency attribute



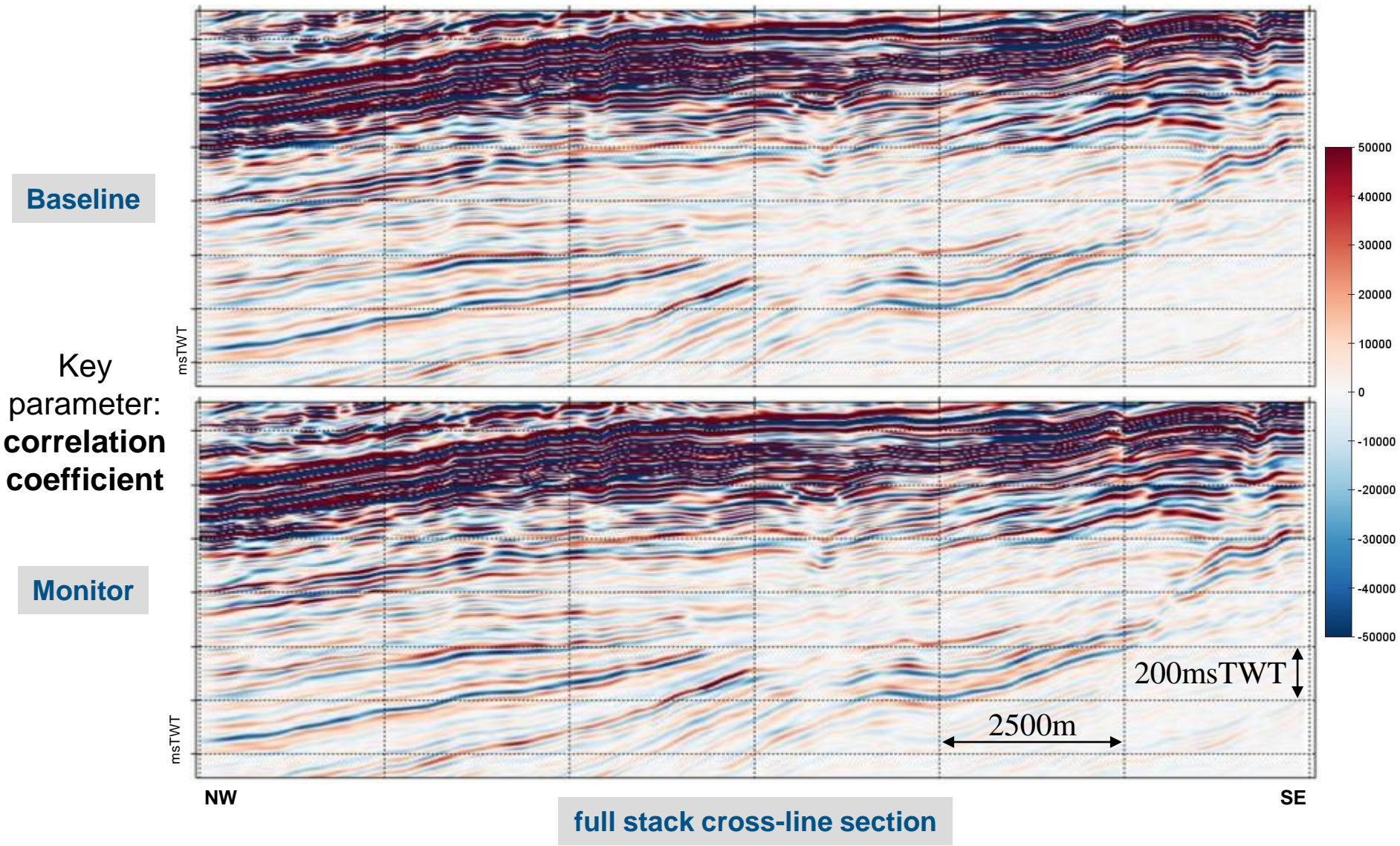
RAW full stack baseline

(zoom)
— Horizon 1 — Horizon 2 — Horizon 3

A **short-scale isotropic artefact** is identified on both full stack volumes. It accounts for ~20% of the total spatial variability of the data sets.

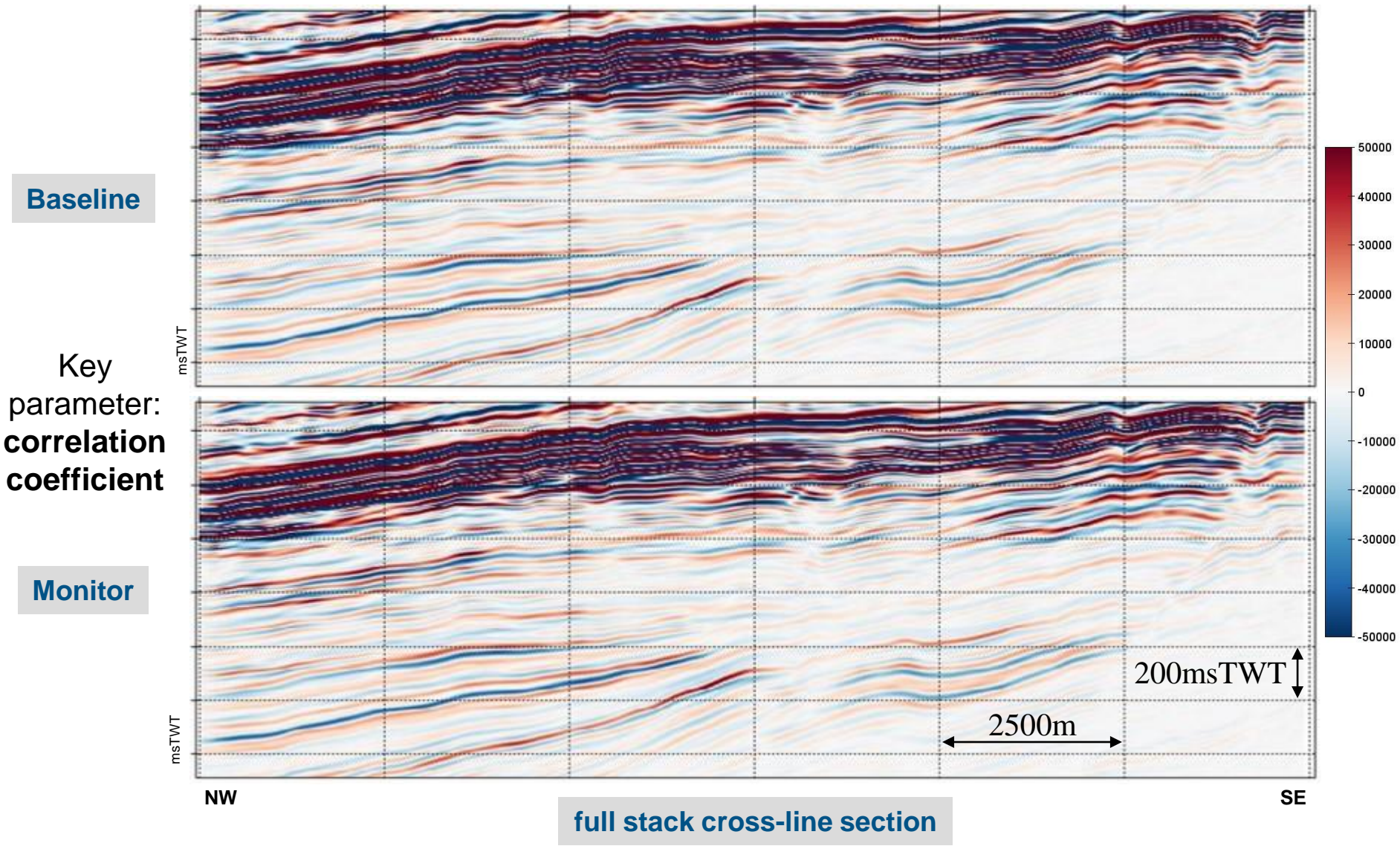
4D monitoring enhancement with LostCor filtering

LostCor filtering



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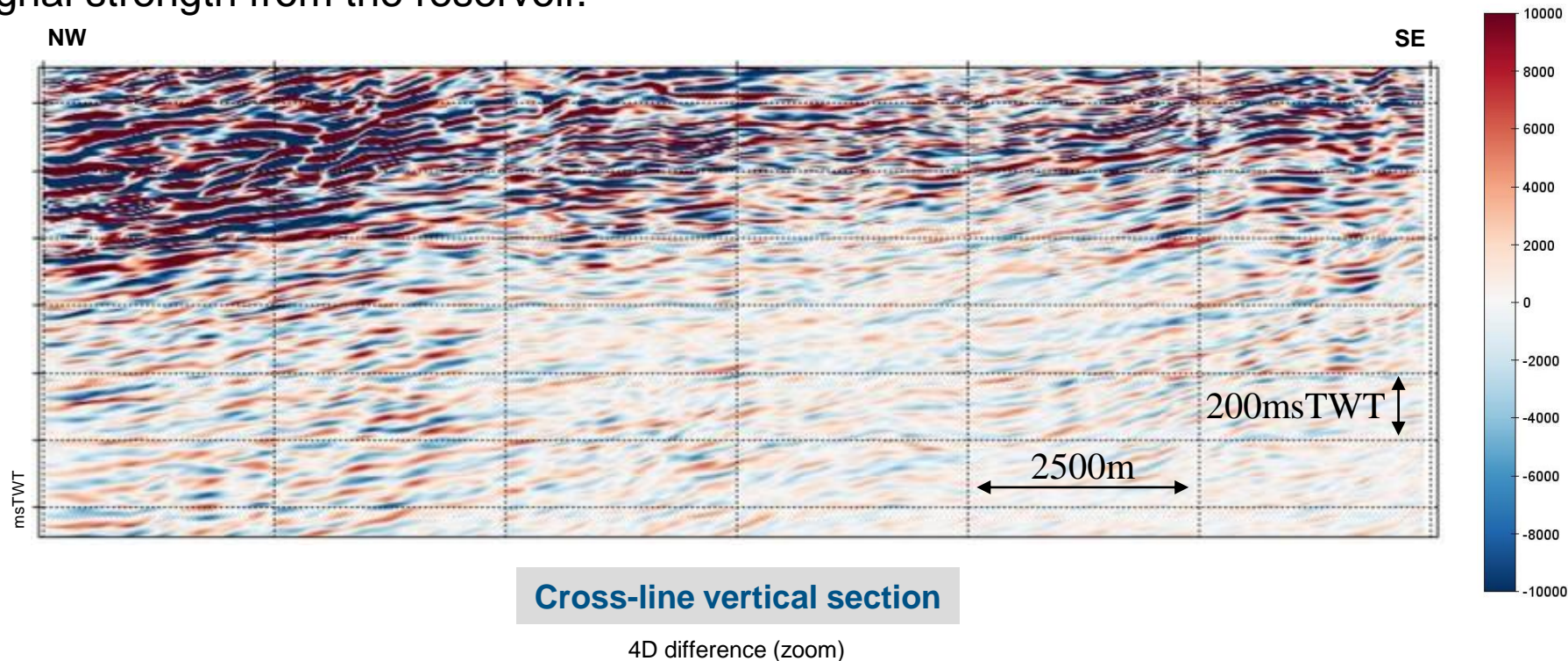
LostCor filtering



4D monitoring enhancement with LostCor filtering

4D difference: Base - Monitor

Thanks to **local parameters (M-GS®)**, filtering with **multi-variable approach**, parallel to reservoir dip, has attenuated steeply dipping events whilst maintaining the signal strength from the reservoir.

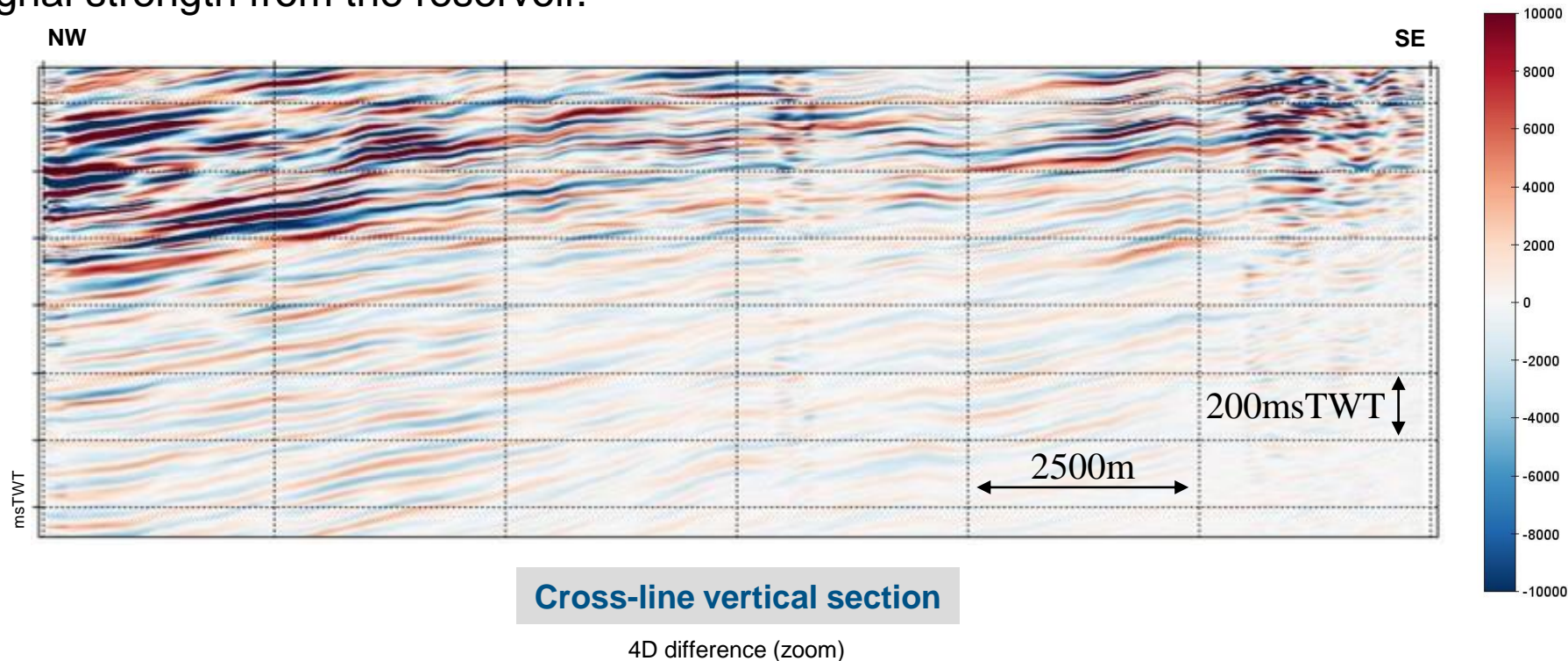


A **co-variogram model** is used to filter out the noise components of the base and monitor simultaneously. As a result, reflectors parallel to the reservoir are strengthened whereas reflectors with steeper dip are attenuated.

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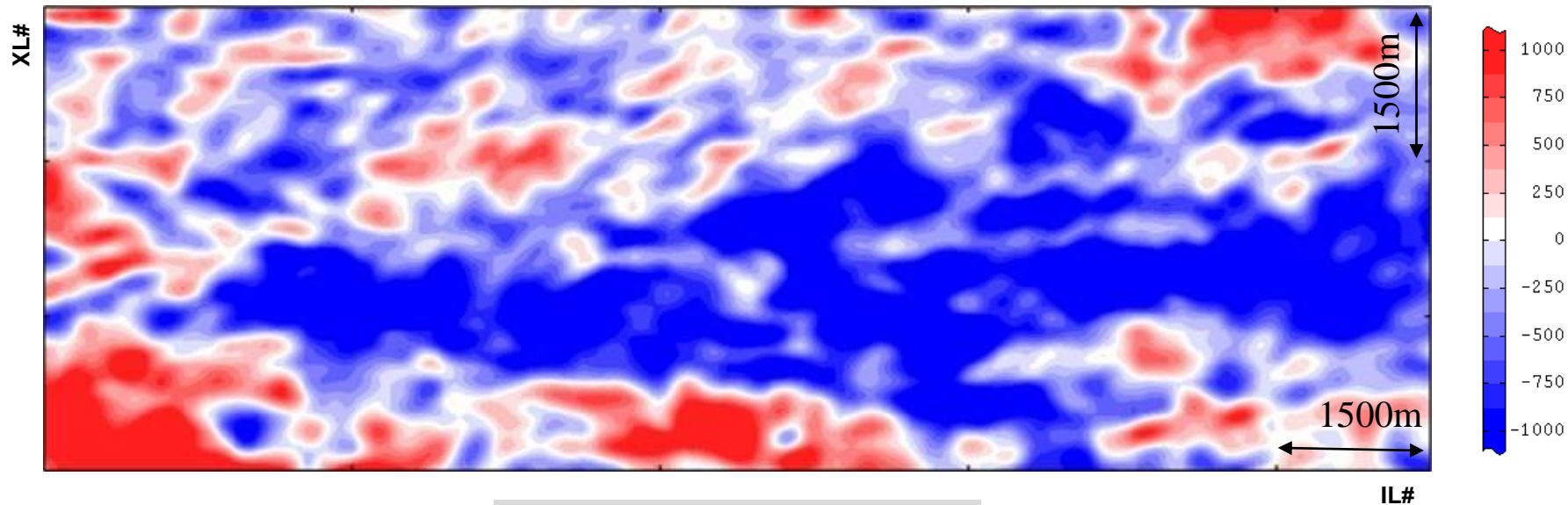
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4D monitoring enhancement with LostCor filtering

4D observations and conclusions

Co-filtering the base and monitor with the LostCor model enables **easier interpretation of 4D difference attributes**: all 4D QC properties are improved and the amplitude difference shows a more laterally consistent response around producing wells.

Vertical resolution is not affected (no change in frequency spectrum).



4D RMS difference time-slice

RMS attribute computed inside a 400ms time-window – difference Base - Monitor

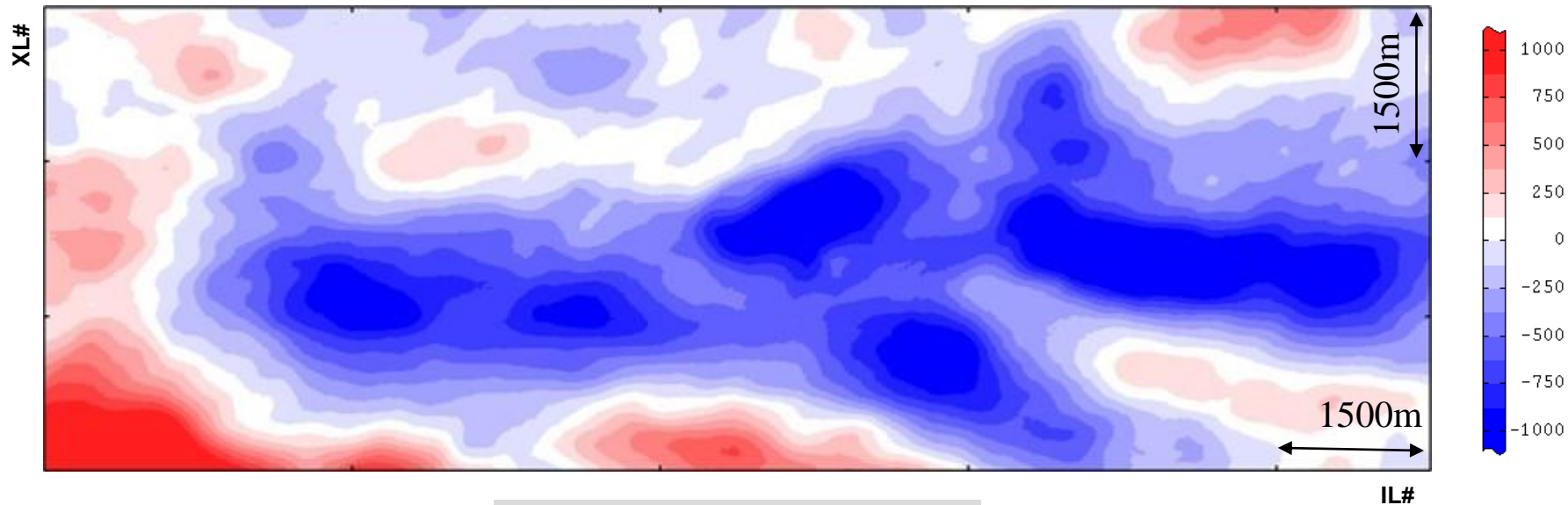
Combination of **multi-variable geostatistics** and **local parameters** ensures the **optimal removal of all types of noise**.

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