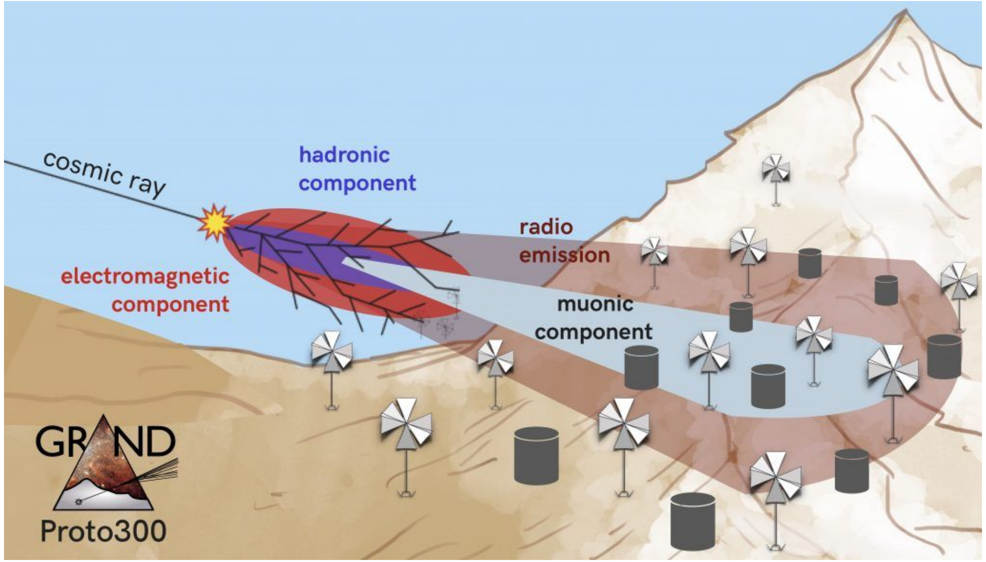
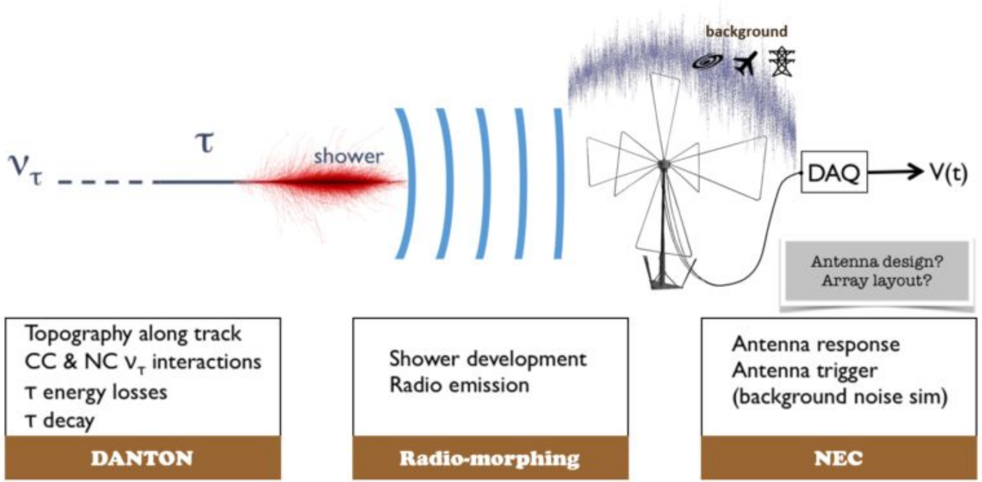
GRANDProto300

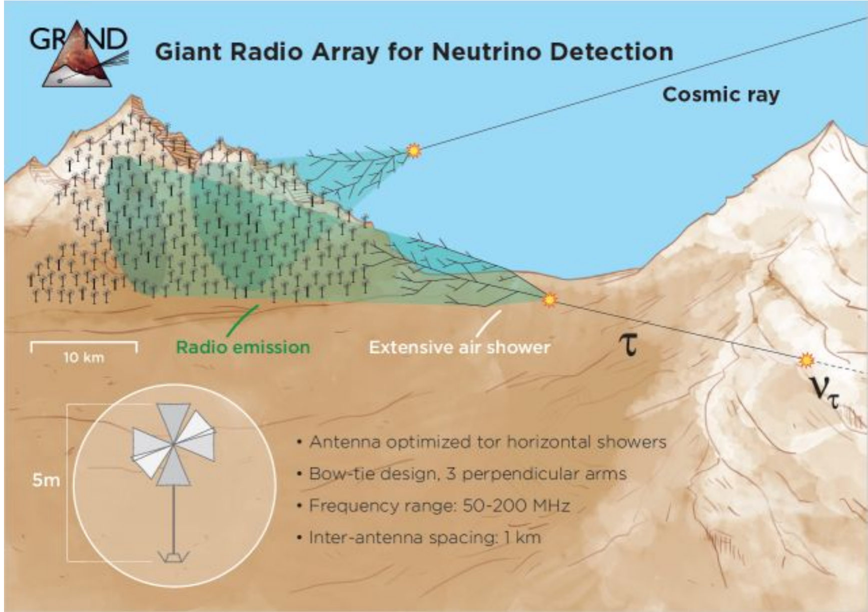
GRANDProto300 will be an array of 300 antennas deployed over 200 km^2. It will operate in the 50-200 MHz band and will trigger, from radio data alone, on nearly horizontal air showers.

The preliminary layout of GRANDProto300 covers 200 km^2 with ~200 detection units to enable large statistics at EeV energies, complemented with two denser levels of infills. This density hierarchy enables to reach good accuracy and large statistics from energies as low as $10^{16.5}$ up to $10^{18.5}$ eV, with a single system.



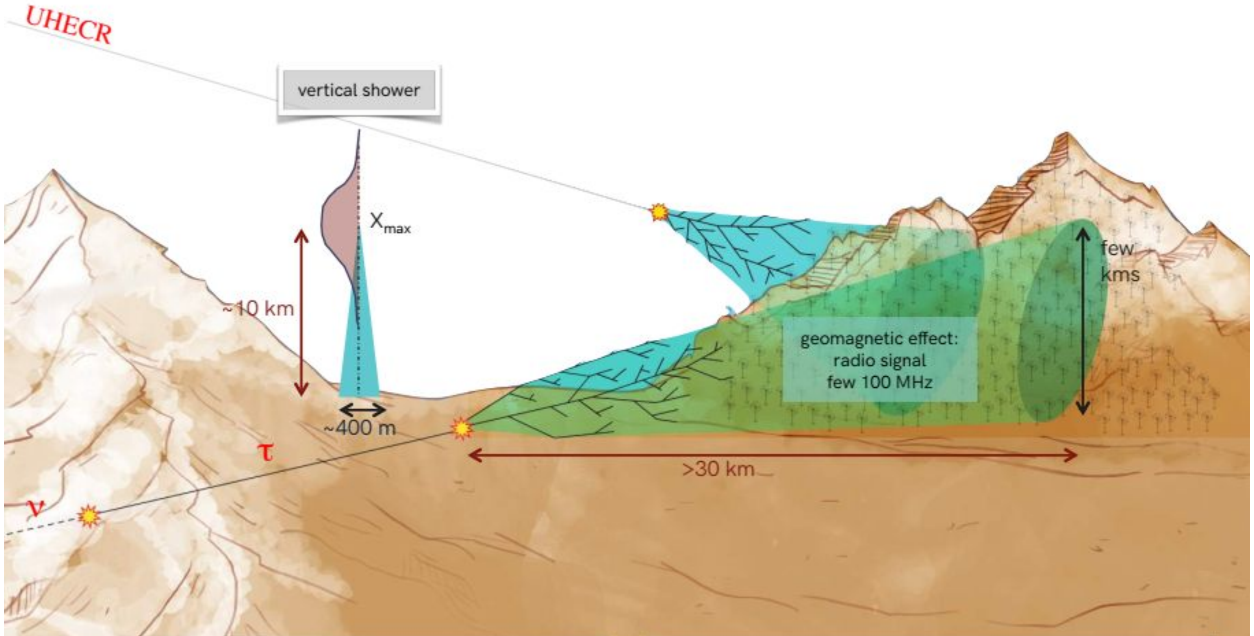
GRANDProto300





GRANDProto300

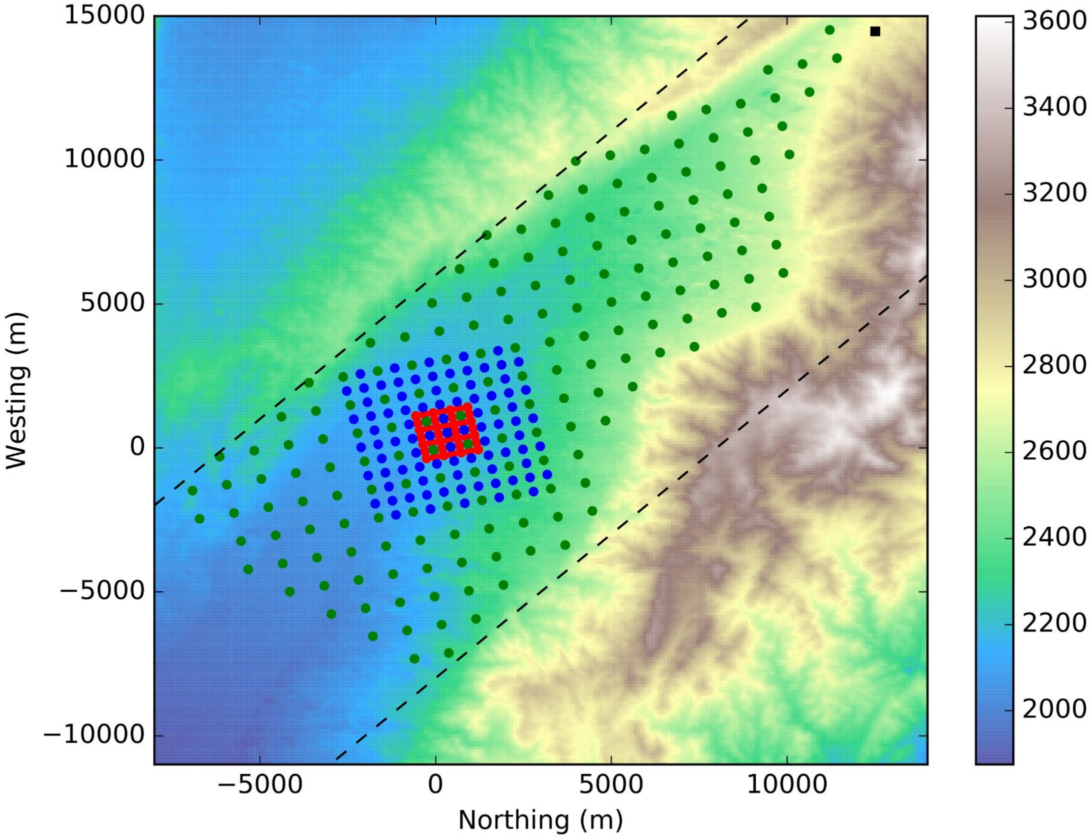
Radio detection of ultra-high-energy air-showers



radio detection: **a mature technique**
AERA, LOFAR, CODALEMA, Tunka-Rex, TREND

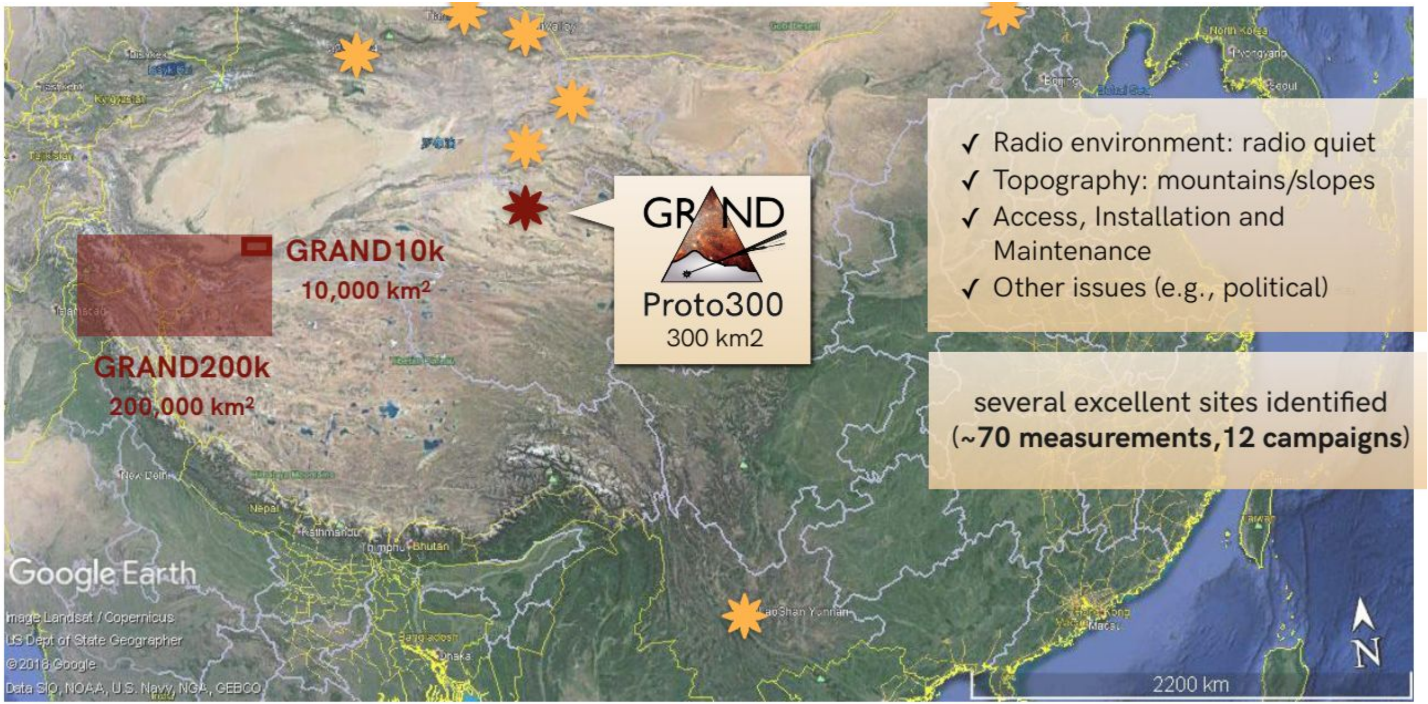
radio antennas: **scalable, cheap, robust**
ideal for **giant** arrays

GRANDProto300



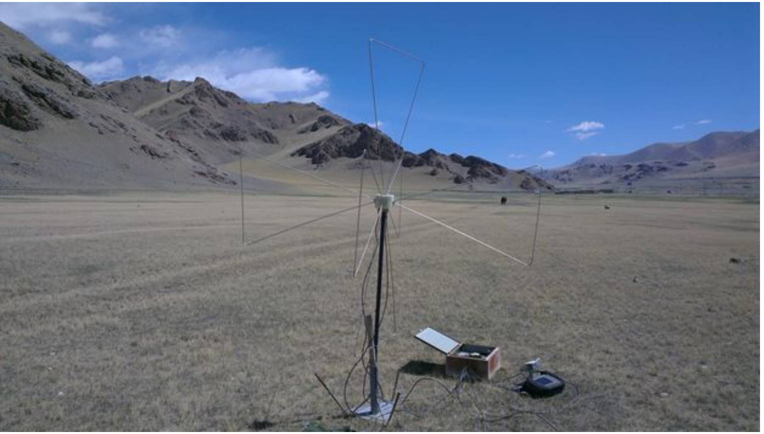
An ideal setup, as in GRANDProto300, is thus a hybrid array of radio antennas and muon detector, to have a handle on both the electromagnetic and muonic contents of the shower. For inclined showers as will be observed in GRANDProto300, the electrons are absorbed in the atmosphere, leaving only muons on the ground. Autonomous radio detection allows to measure the shower energy mostly independently from hadronic models.

GRANDProto300

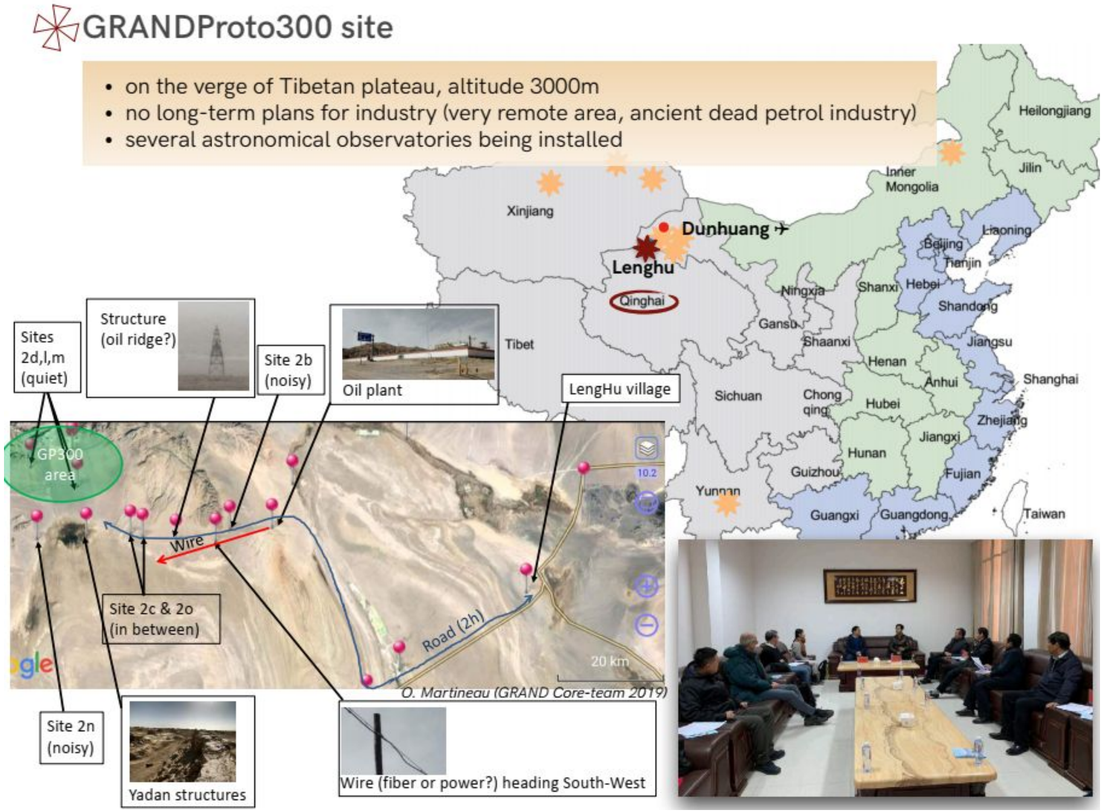


Deployment site and political support in China. A dozen of site surveys have been conducted in the past 2 years in mountainous and desertic areas in China and an excellent 300 km2 site with clean radio background properties and good accessibility has been selected in the Qinghai Province, on the verge of the Tibetan plateau. The project has strong political support at local and Province level, and deployment is planned for 2021.

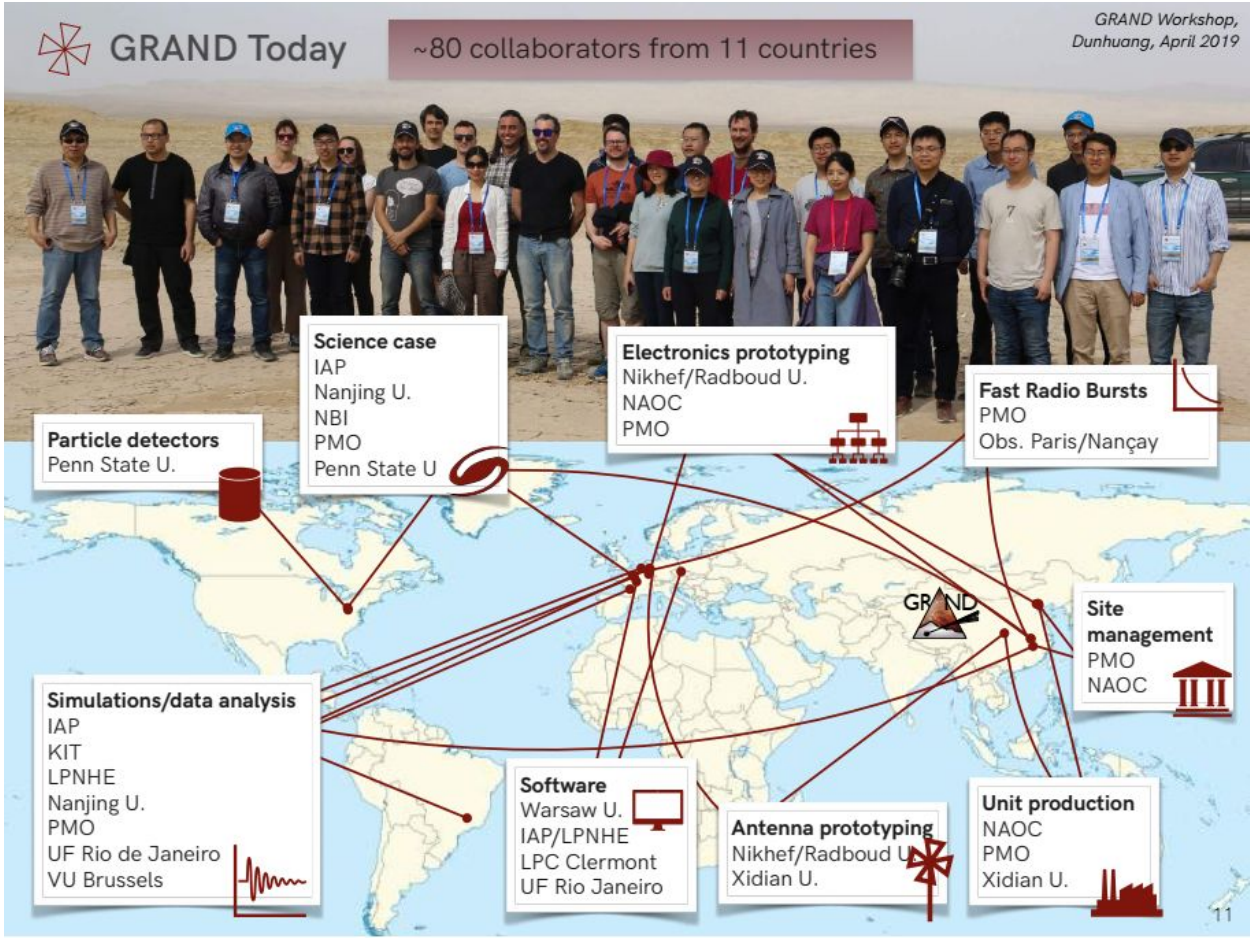
GRANDProto300



A GRANDproto35 three-dimensional antenna at the testing site, XinJiang Province, China.



GRANDProto300



GRANDProto300