Archaeomagnetic directions and intensities from New Zealand: evidence for a fifteenth century AD archaeomagnetic “spike” in the SW Pacific?

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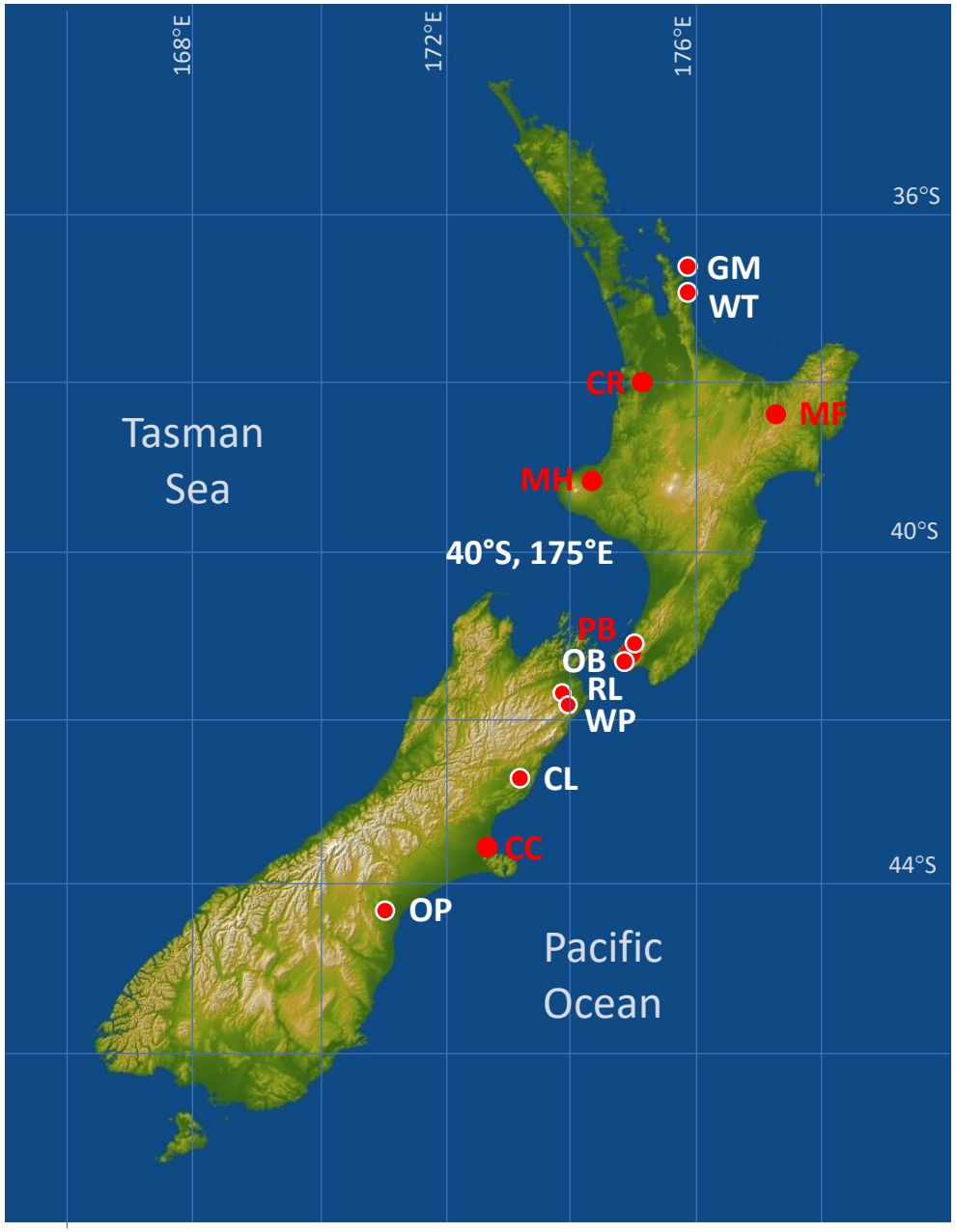


Figure 1: Archaeomagnetic sites: red – directions only; white – directions and intensities

Figure 2: Orientation of hangi stones prior to removal for sampling and measurement

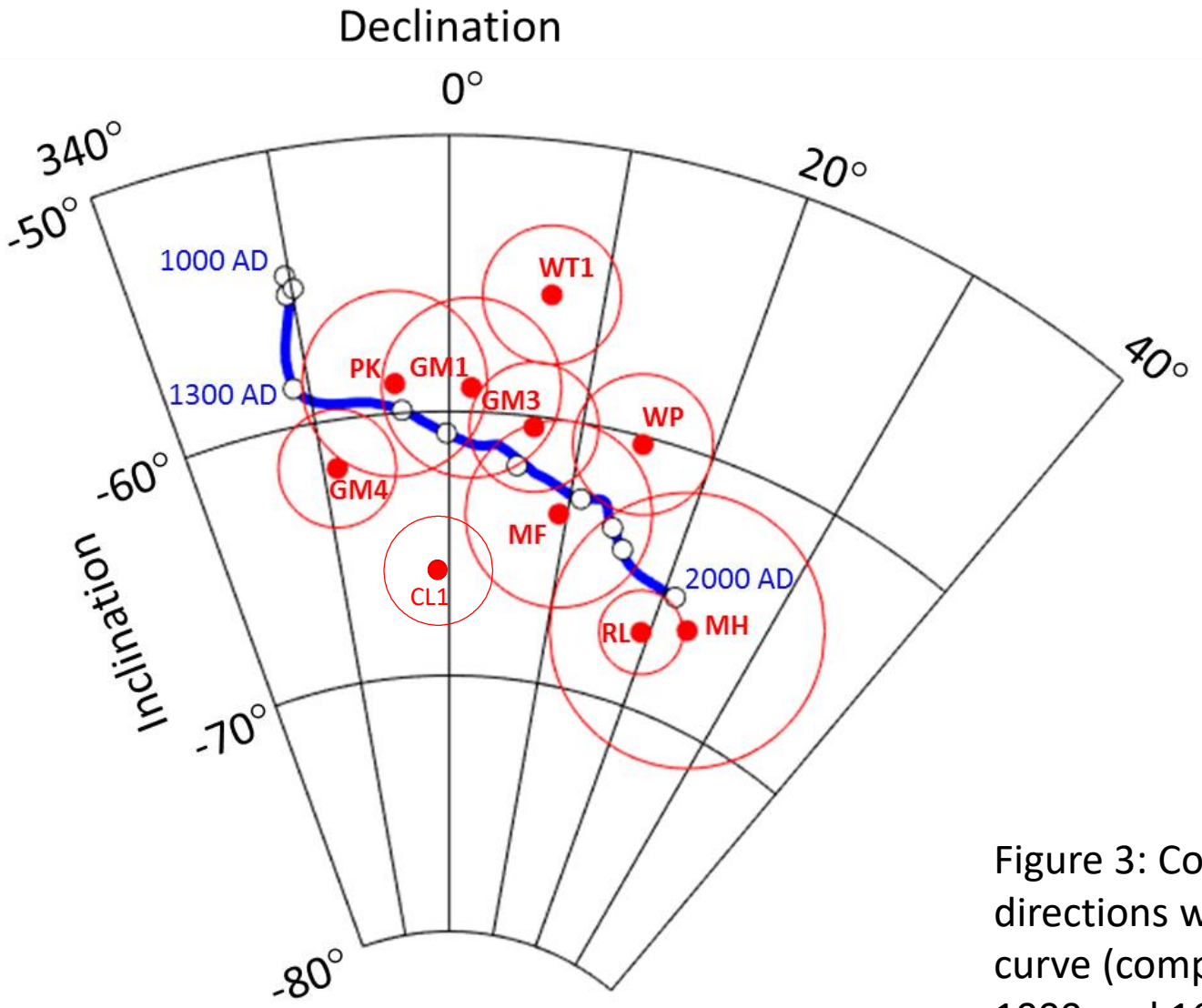
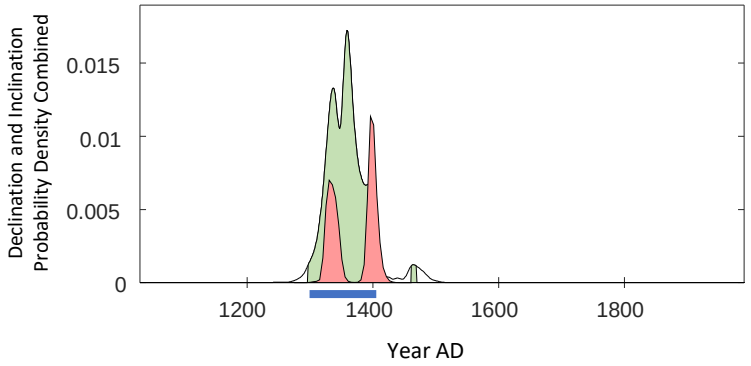


Figure 3: Comparison of archaeomagnetic site mean directions with NZPSV1k palaeosecular variation curve (compiled from lake sediment data between 1000 and 1600 AD and gufm1 (Jackson et al., 2000) for 1600-1950 AD)

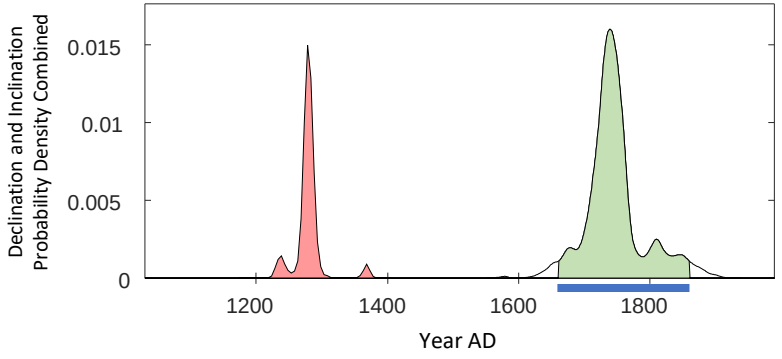
Figure 4: Examples of Estimation of Date of last use of hangi/ TRM of stones:
Green = probability density from matching of declination/inclination to NZPSV1k palaeosecular variation curve
Pink = probability density function after calibration of conventional radiocarbon age estimate, using SHCal 13 (Hogg et al., 2013)

GM4



GM4: C14 age is on charcoal from twigs of short-lived shrub, calibrated date is in good agreement with palaeomagnetic age estimate. Preferred date 1350 ± 50 AD

WP



WP: C14 age is on charcoal from wood of long lived tree, calibrated date is in > 400 years older than palaeomagnetic age estimate. Significant inbuilt age inferred. Preferred date 1760 ± 100 AD

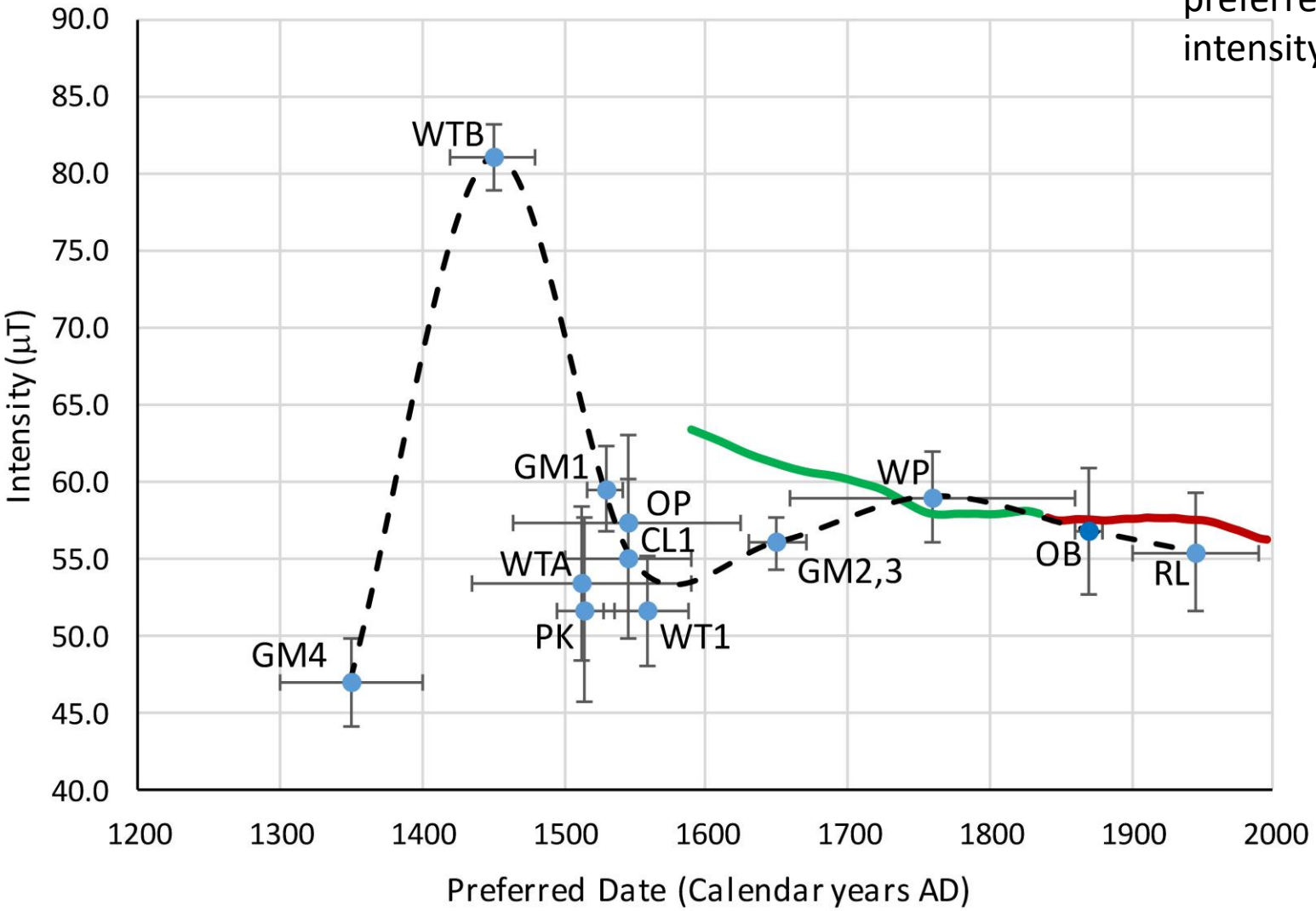


Figure 5: New Zealand archaeointensities vs. preferred date; gufm1 modelled geomagnetic intensity (red and green)

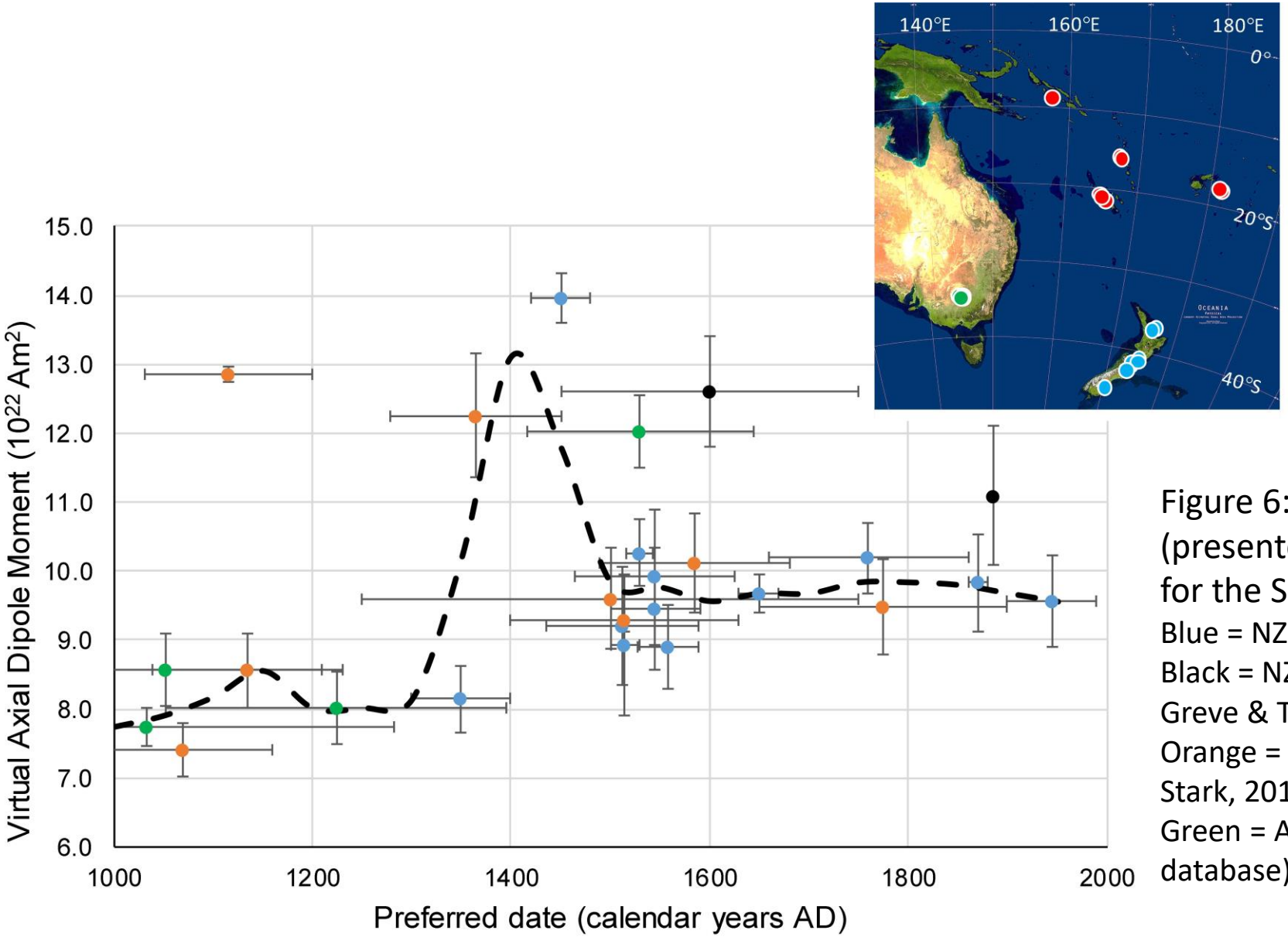


Figure 6: Compilation of palaeointensity data (presented as virtual axial dipole moments) for the SW Pacific.

Blue = NZ Archaeointensities (this study);
Black = NZ volcanic data (Tanaka et al., 2009; Greve & Turner, 2017);
Orange = SW Pacific Islands (Stark et al., 2010; Stark, 2011);
Green = Australia (Barbetti, 1983, Geomagia database)

Thank you!

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