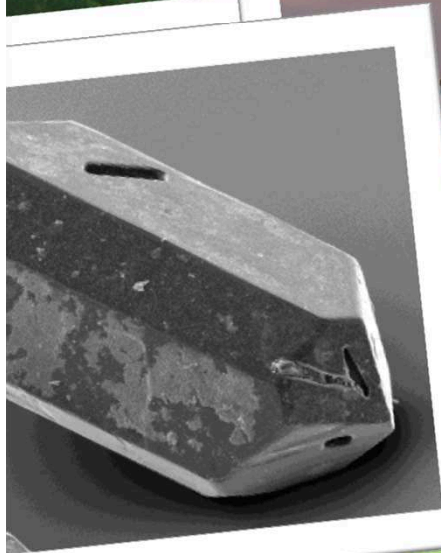
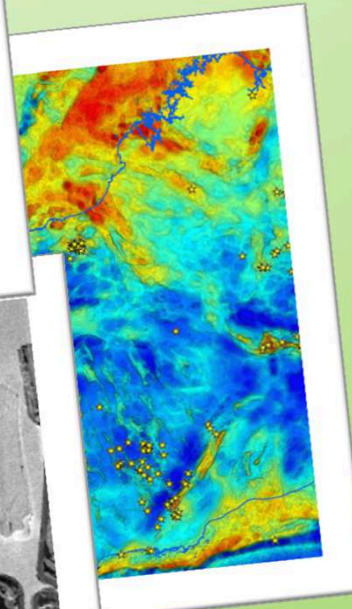
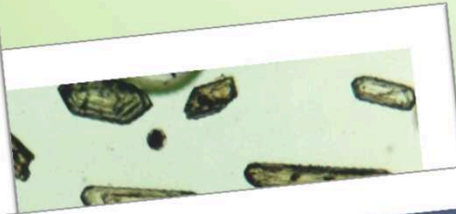
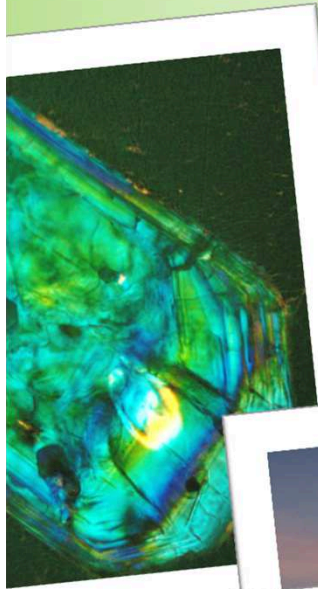


Eucla Basement Stratigraphic Drilling – Results Release

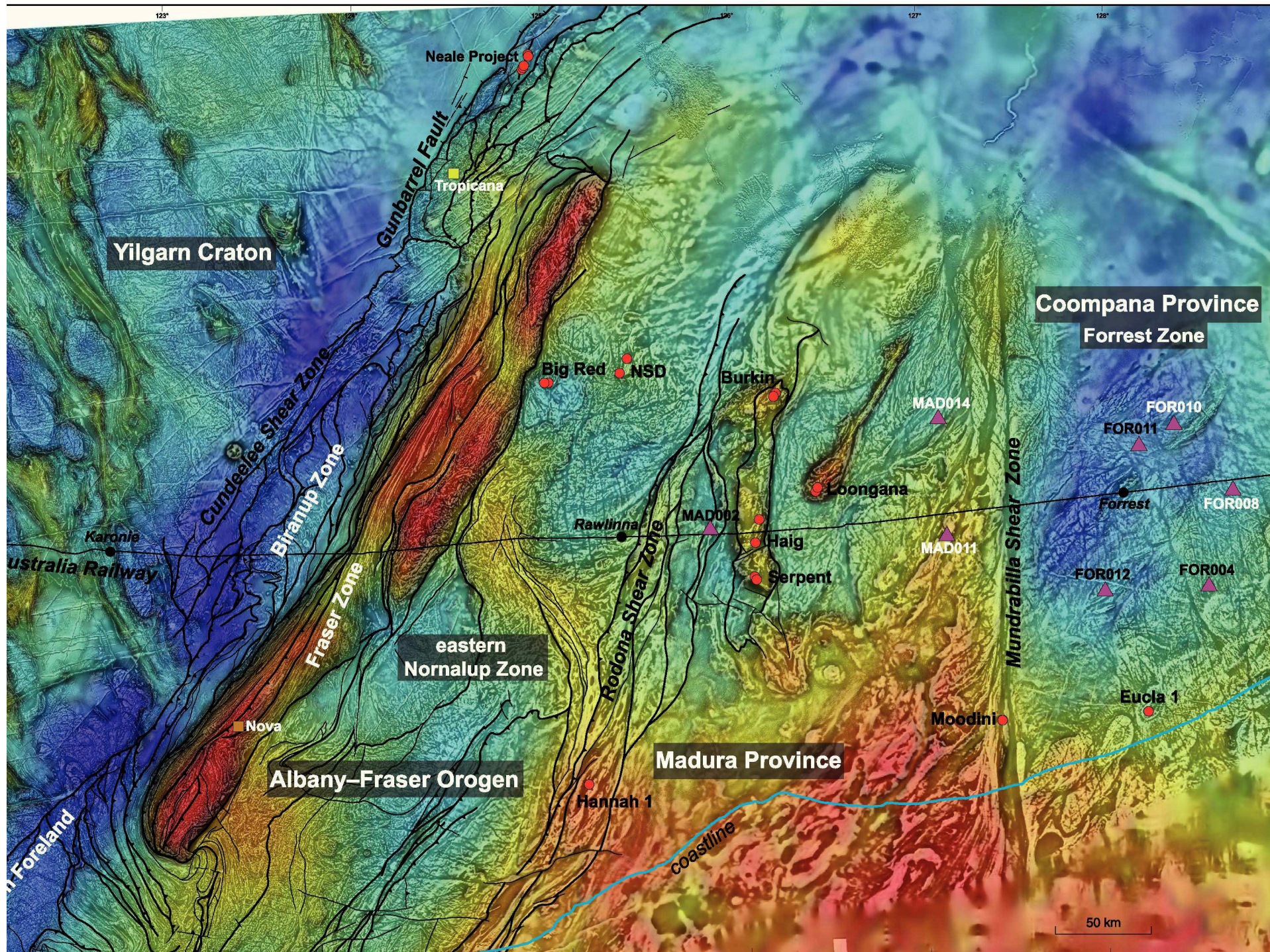
Session 2: Forrest Zone, Coompana Province

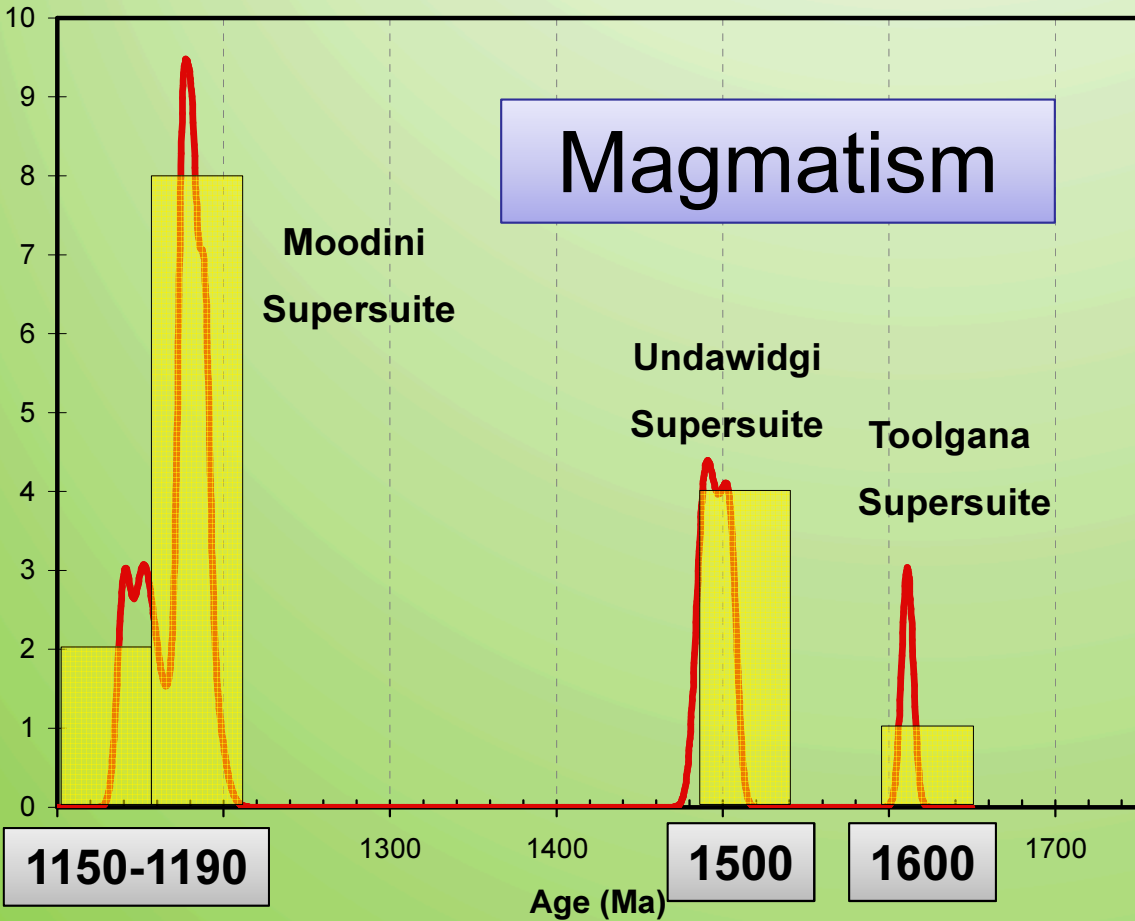
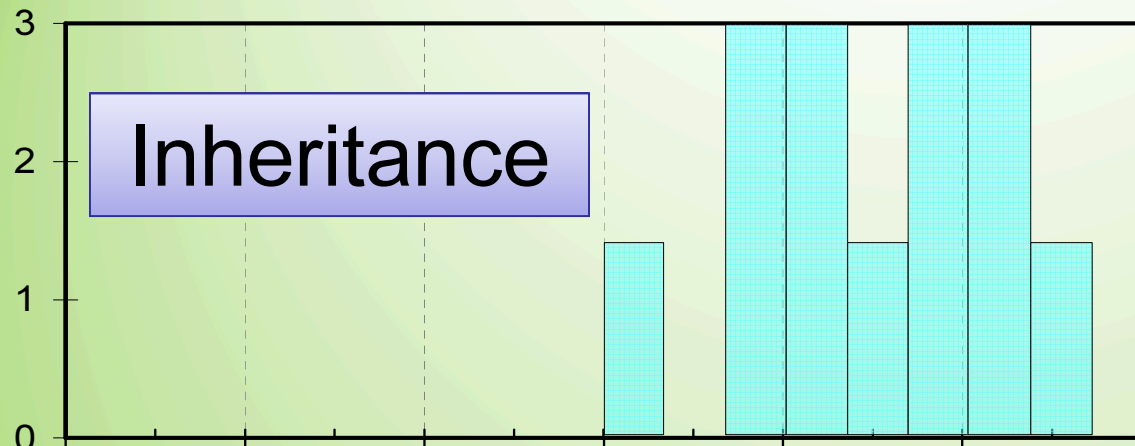
Isotopes & crustal evolution



Curtin University

Perth 10th September





At least one phase of magmatism older than in the Madura Province:

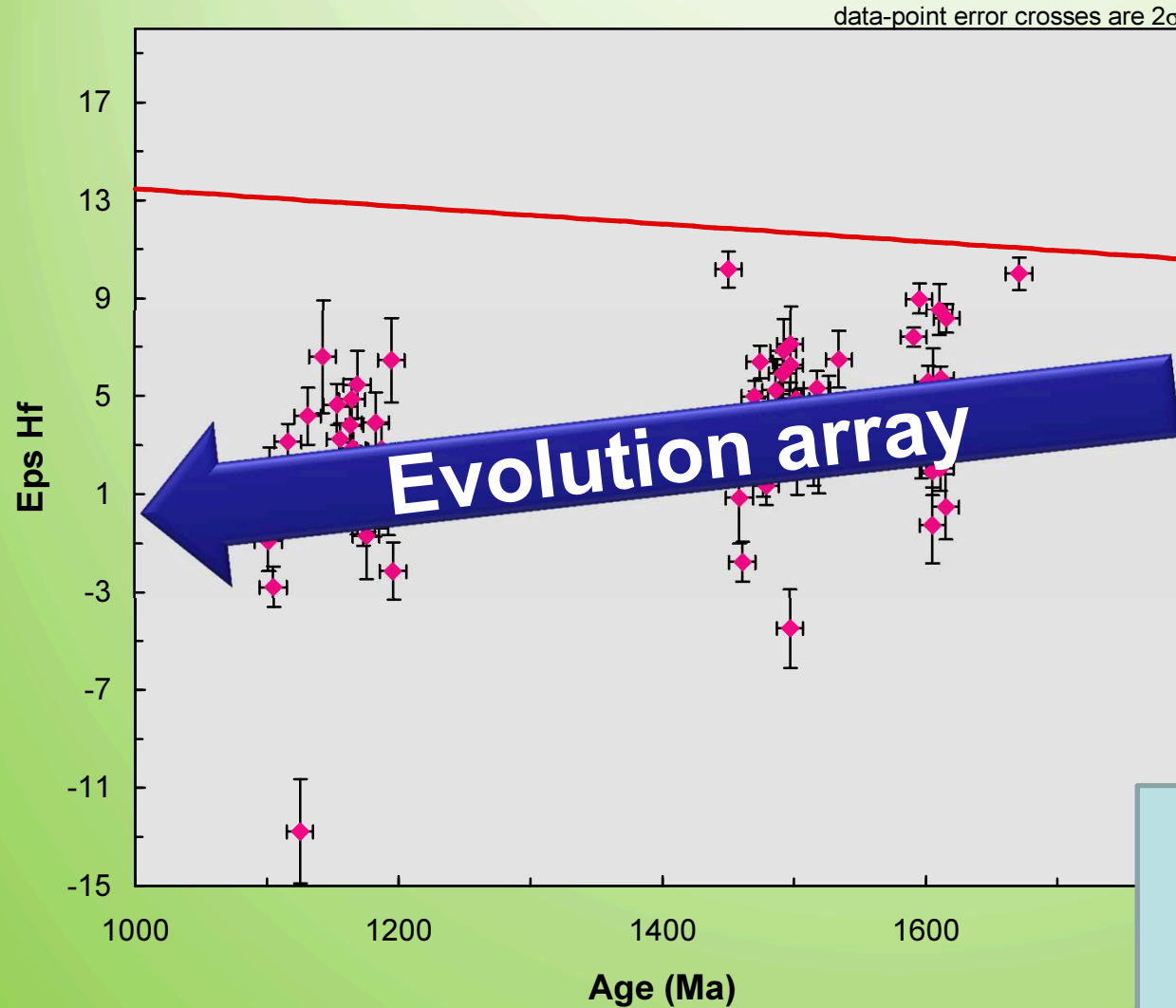
c. 1600 Ma Granitic gneisses

c. 1500 Ma Metagranites

1190-1150 Ma Meta granites

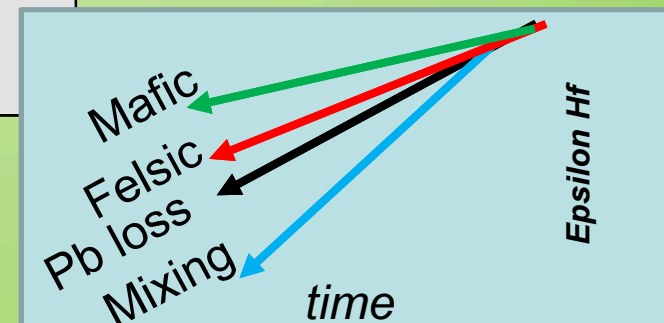
Inheritance in younger granites similar to ages found within older dated igneous rocks in Forrest Zone

Forrest Hf evolution pattern

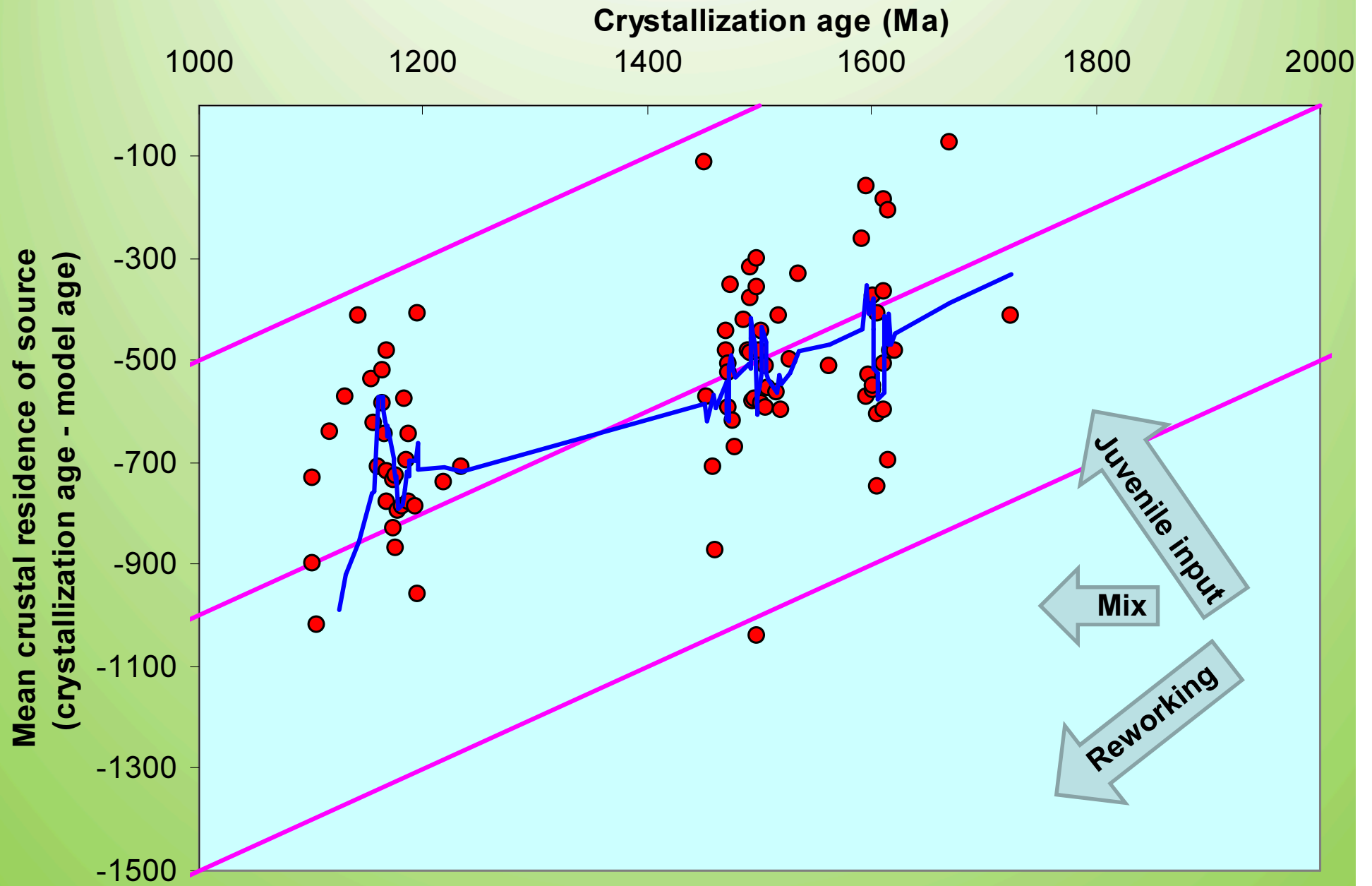


Well defined
apparent
evolution array;

but does it really
reflect reworking
of a single
source?

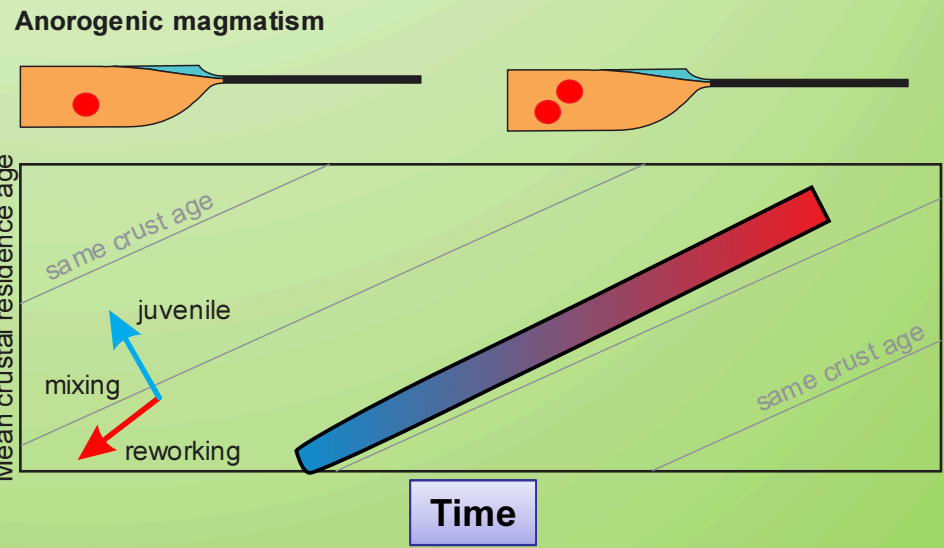
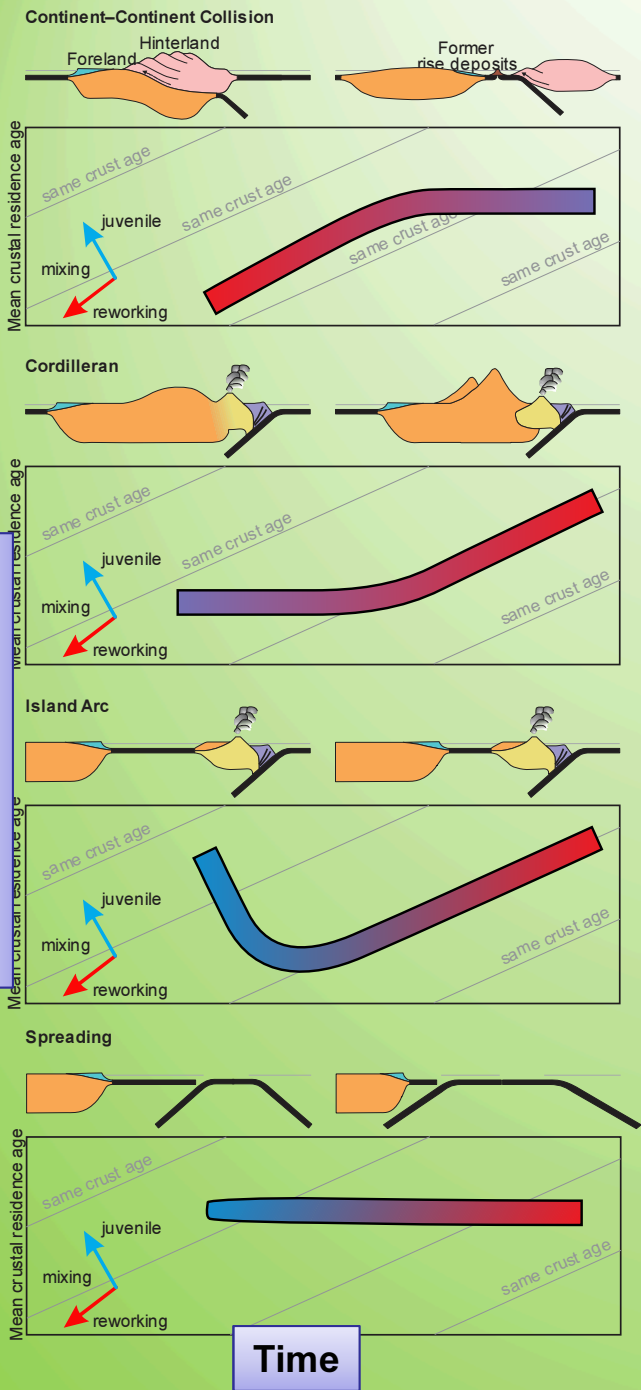


Event signature plot

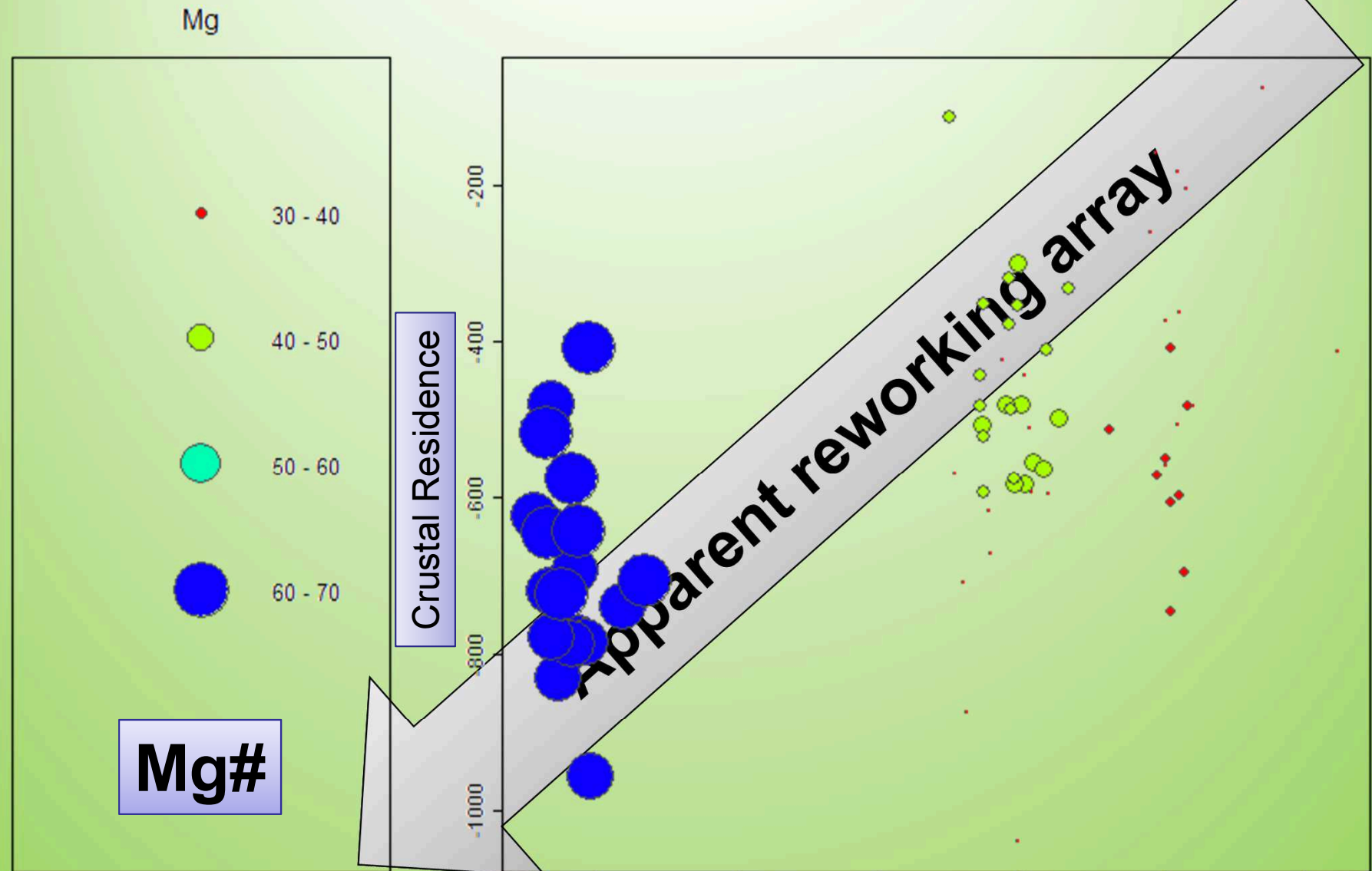


Hf isotopic signatures through time maybe distinctive for specific geodynamic environments

Mean crustal residence

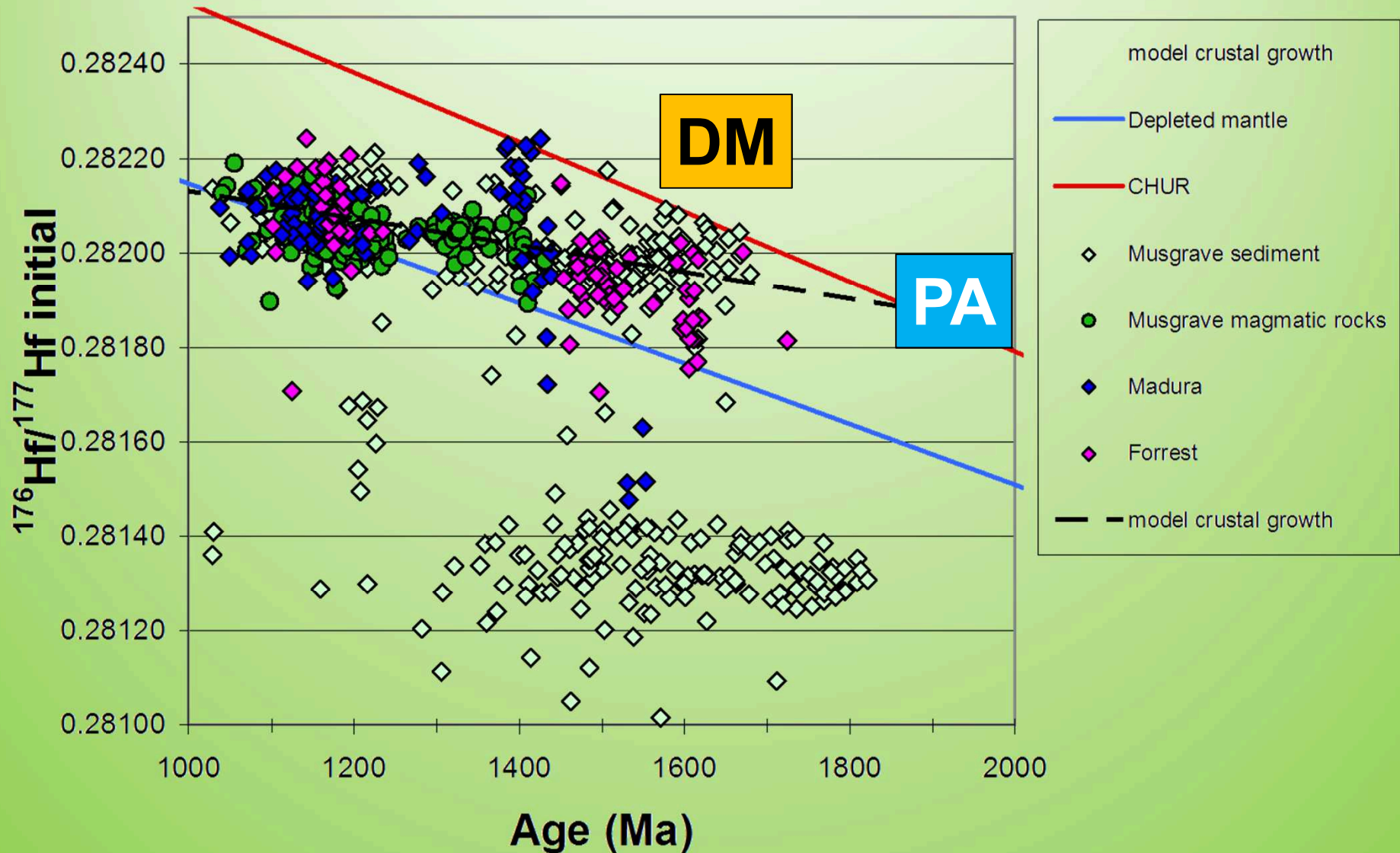


Does the apparent evolution array reflect consistent reworking?

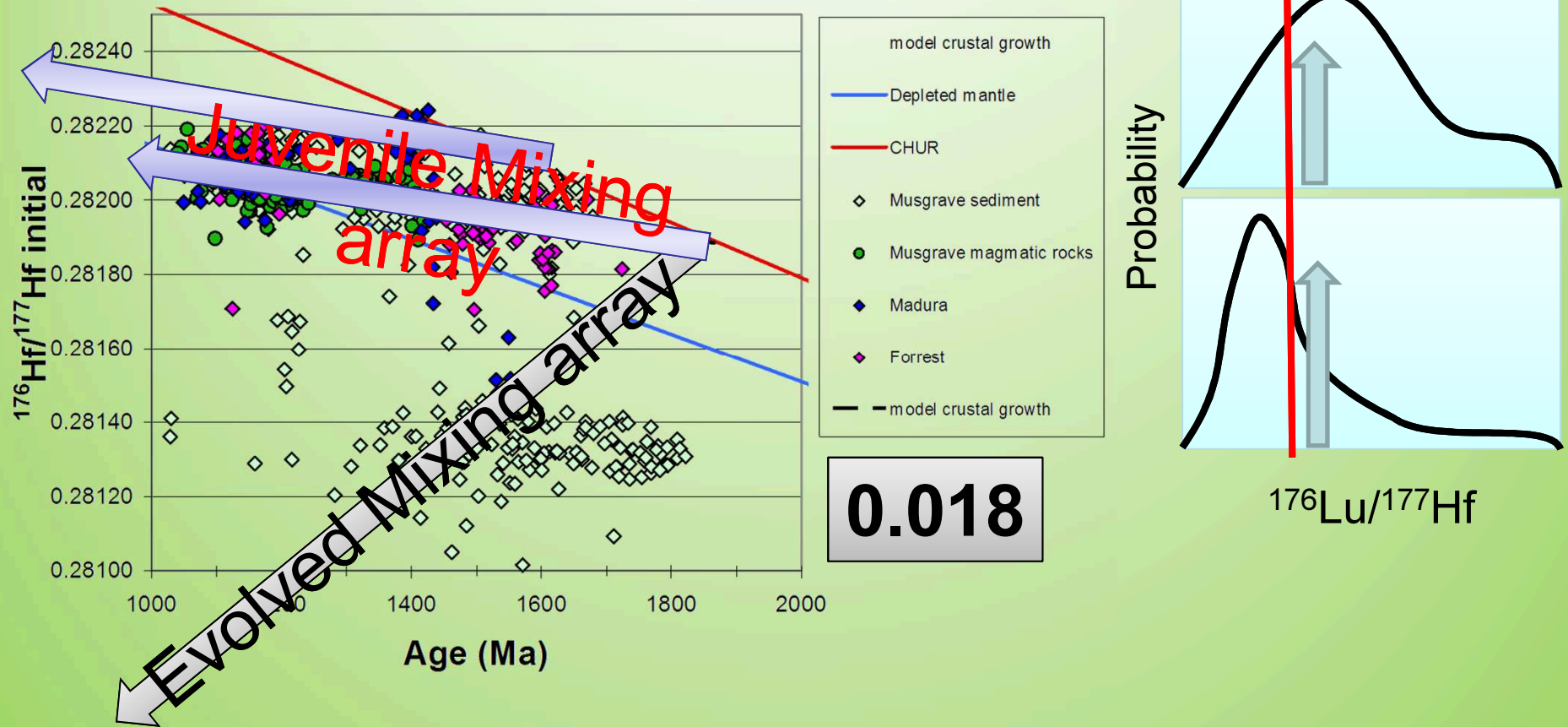


No. Continued (or at least episodic) juvenile input required

Hf evolution pattern of the Madura & Forrest Provinces

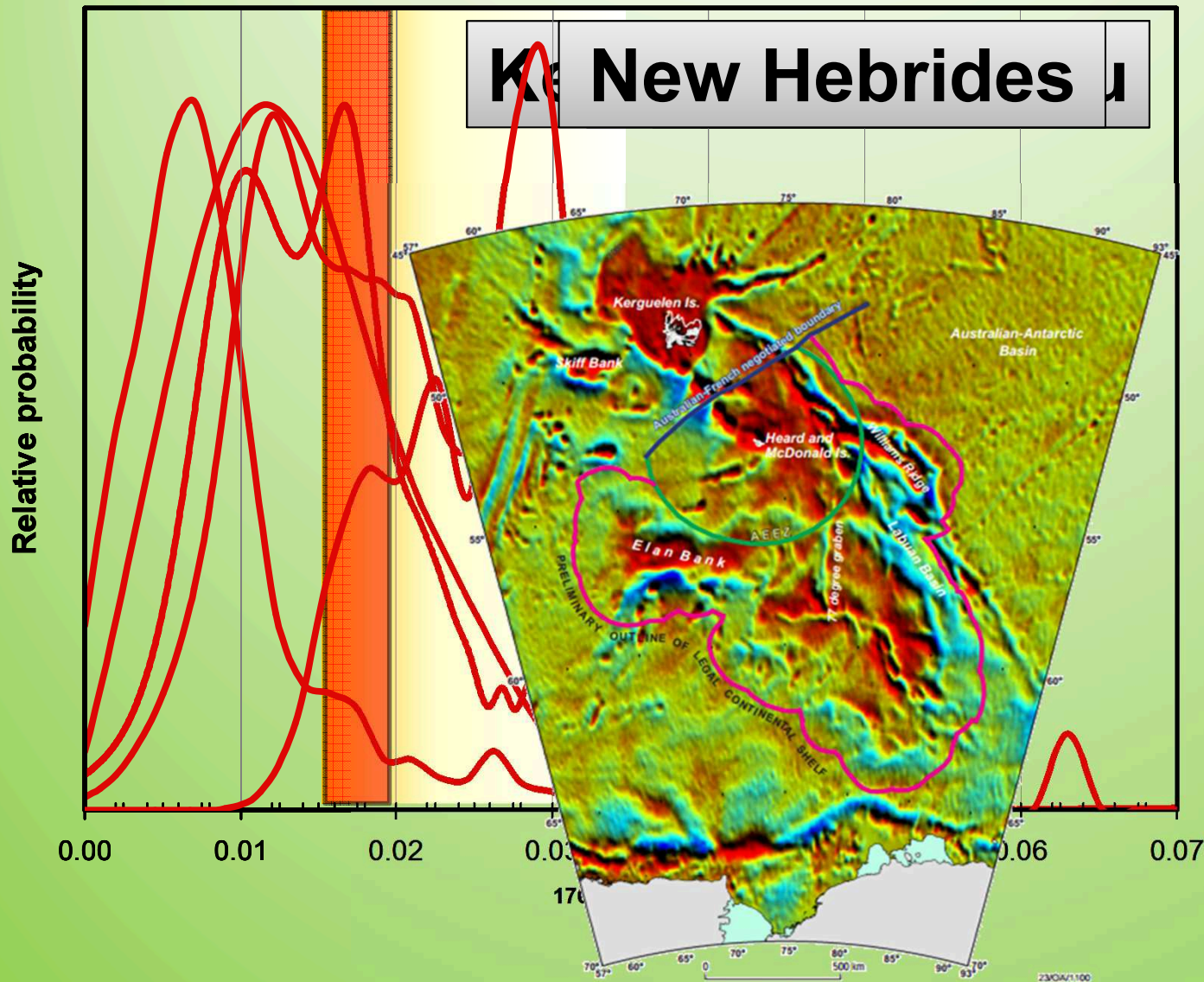


Hf evolution pattern of the Madura & Forrest Provinces



Hf array suggests source with intermediate Lu/Hf with episodic input of high Lu/Hf component

Hf evolution pattern of the Madura & Forrest Provinces



Product of excessive on- or off-axis hot-spot-related oceanic magmatism:

Differentiation of oceanic crust with ribbons of distended continental crust

Northern Kerguelen Plateau low crust velocities ranging from 6.8 to 7.3 km/s = oceanic crust.

Southern Kerguelen Plateau extended continental crust covered by basaltic flows



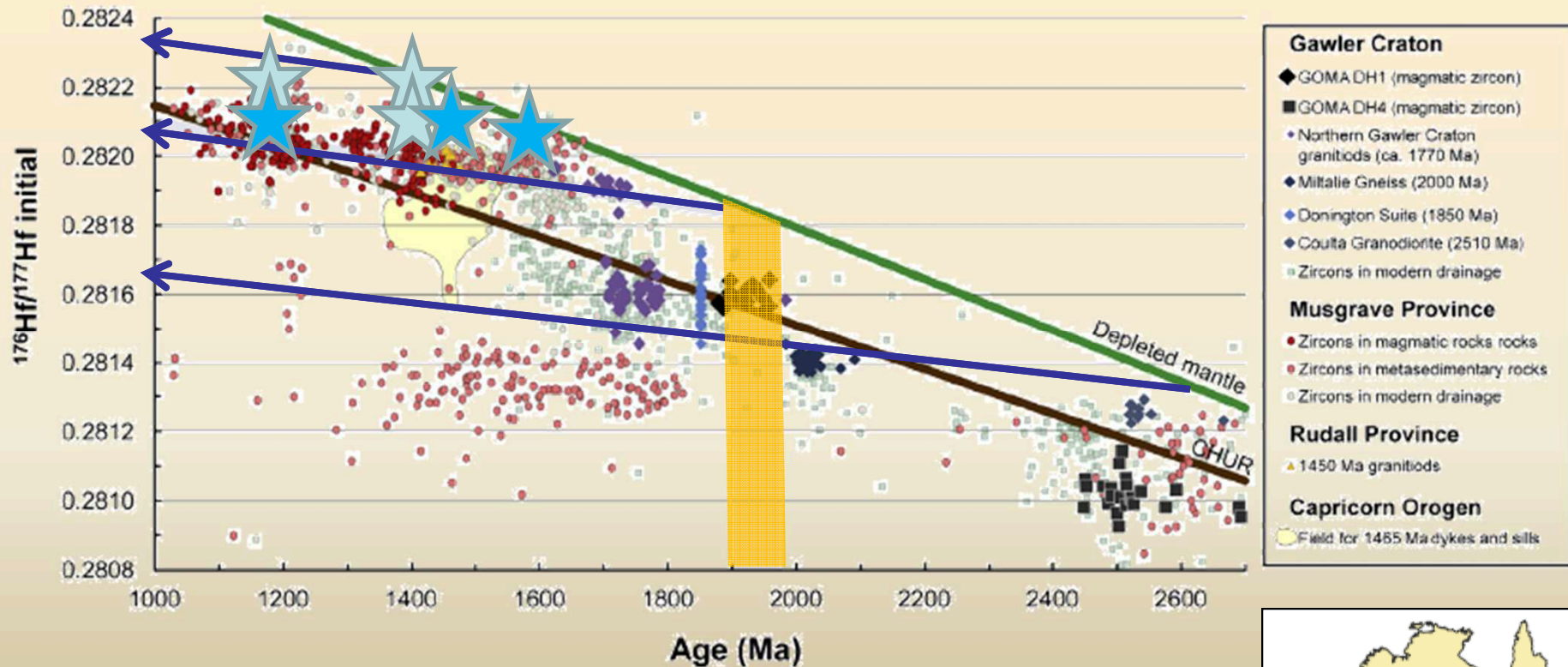
Kerguelen Plateau

Product of a volcanic hotspot possibly related to separation between the Indian and Australian halves of the Indo-Australian plate

The plateau existed above water as a microcontinent three different times over a period of 80 million years

Contains components of both continental and oceanic crust

Hf evolution pattern of the Madura & Forrest Provinces: comparison to Gawler margin units



Widespread c. 1950 Ma juvenile addition signature around the WAC-SAC junction; Proterozoic “Blight Ocean”.



Madura and Forrester; crust of oceanic affinity (with potential of distended continental crust). Swept together during the Proterozoic amalgamation of Australia, carrying arc slivers

