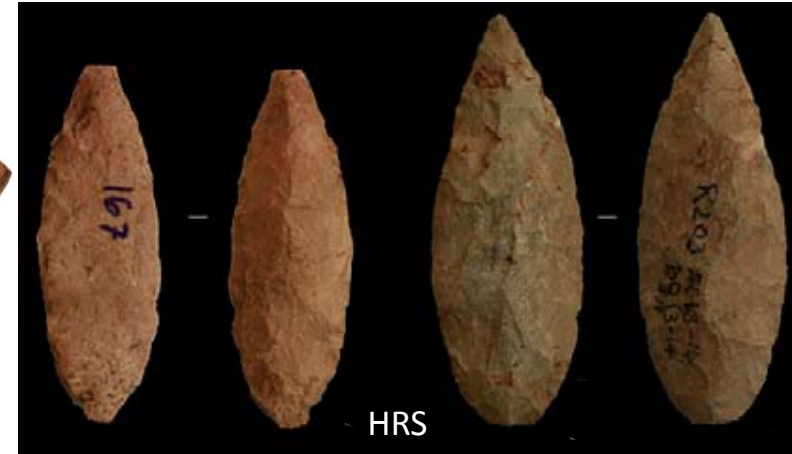
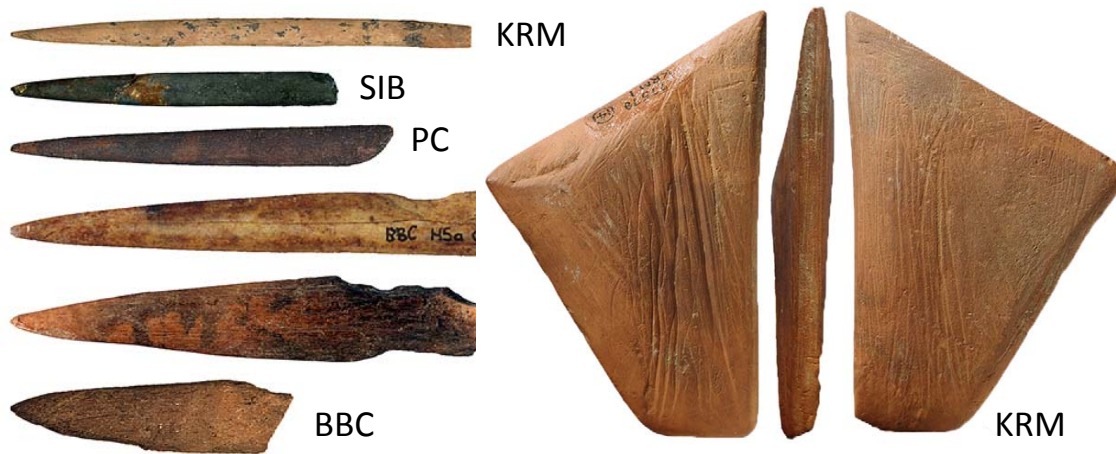




Increasing behavioral flexibility?

An integrative approach to understanding the
Middle Stone Age of southern Africa

Andrew W. Kandel, Michael Bolus, Angela Bruch,
Miriam N. Haidle, Christine Hertler & Michael Märker

Research questions



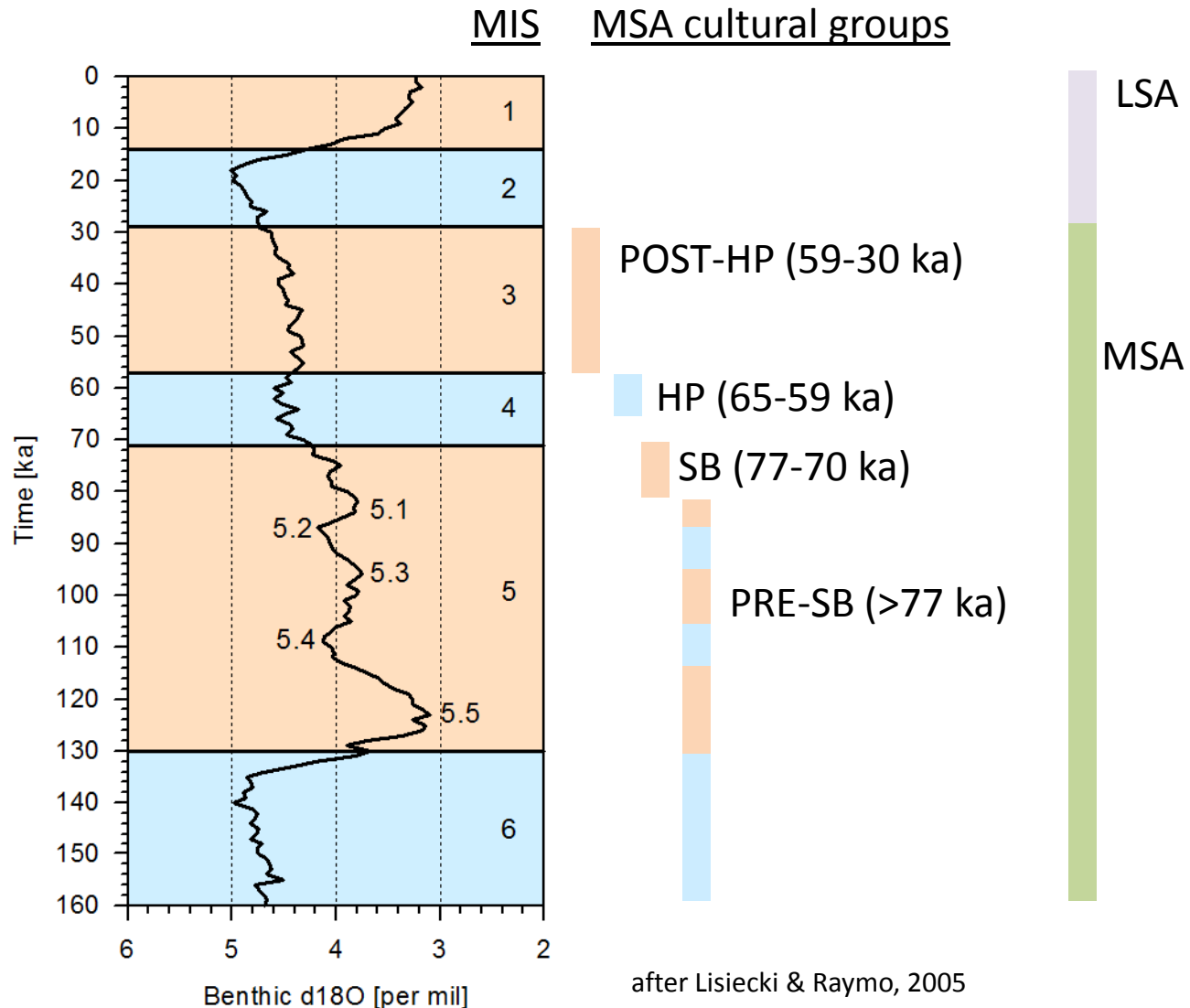
- Is increasing behavioral flexibility a response to environmental change?
- What happens when we shift analytical scale away from site level to gain a regional perspective?
- Can we develop methods to quantify cultural and environmental changes over time?

Test case: Middle Stone Age



- ✓ MSA in southern Africa
- ✓ Ca. 200-30 ka
- ✓ Modern humans + complex behavior
- ✓ Well researched and dated
- ✓ High density of sites
- ✓ Cultural sequence complete

Climate & culture



after Lisiecki & Raymo, 2005

MSA localities

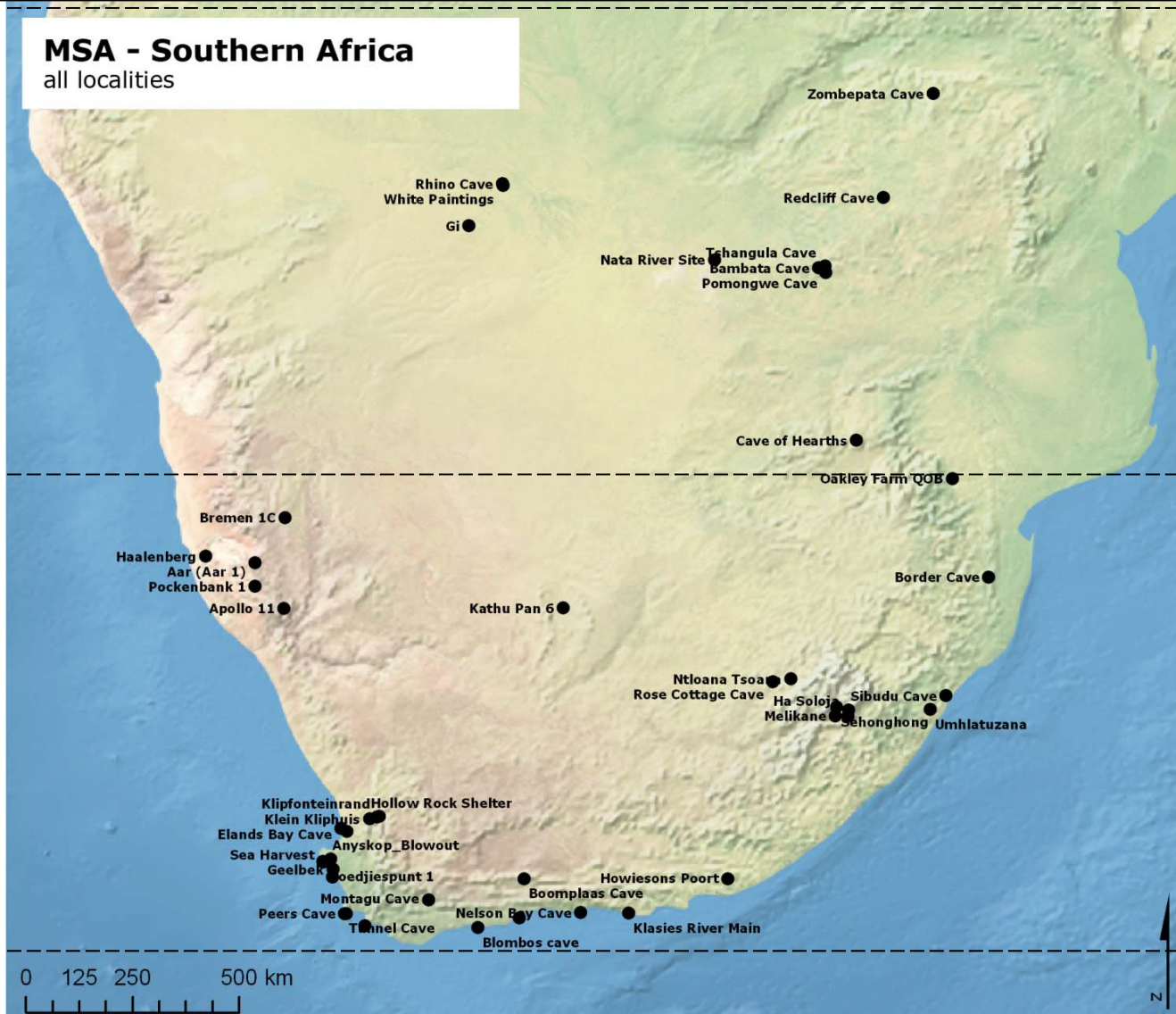


15°S

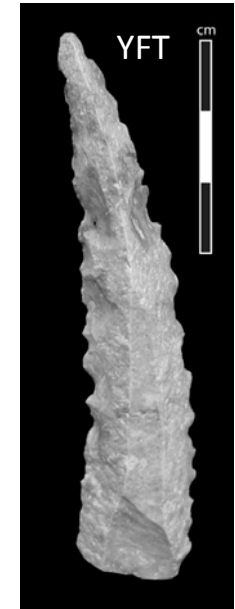
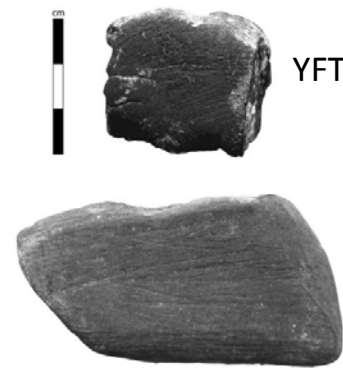
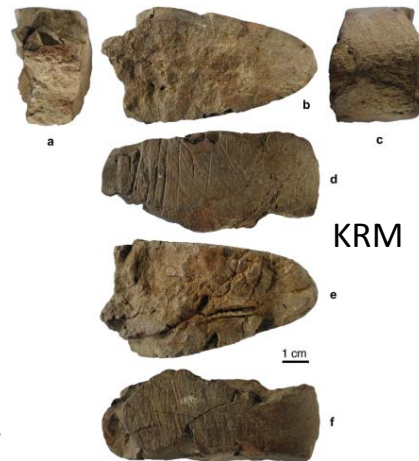
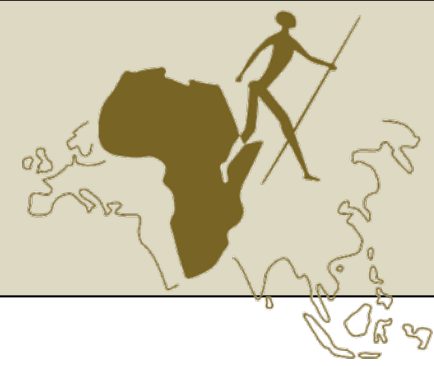
MSA - Southern Africa
all localities

25°S

35°S



Pre-Still Bay



Ocher processing



Variable lithic technology

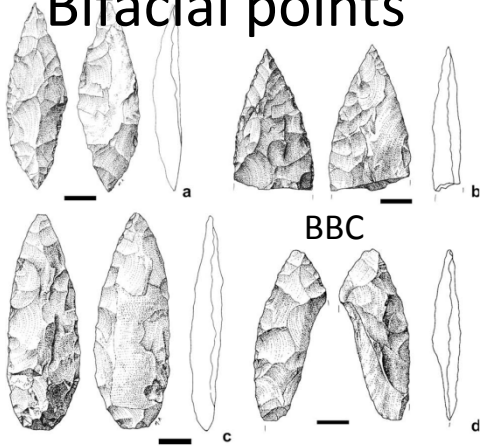


HDP

Still Bay



Bifacial points

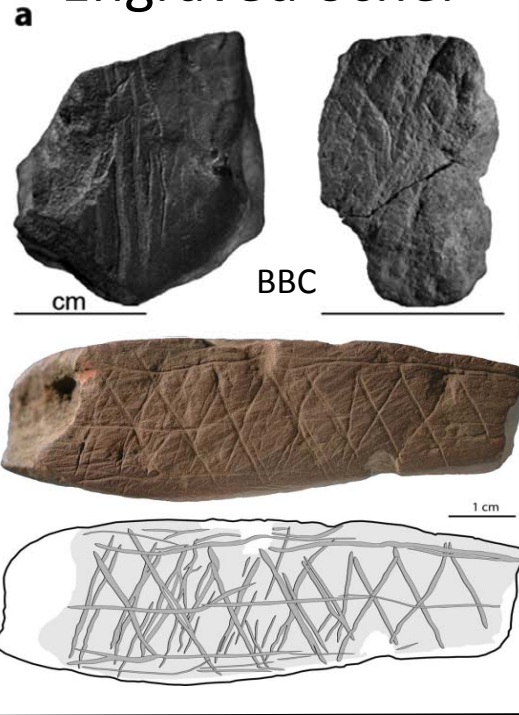


BBC

UMH



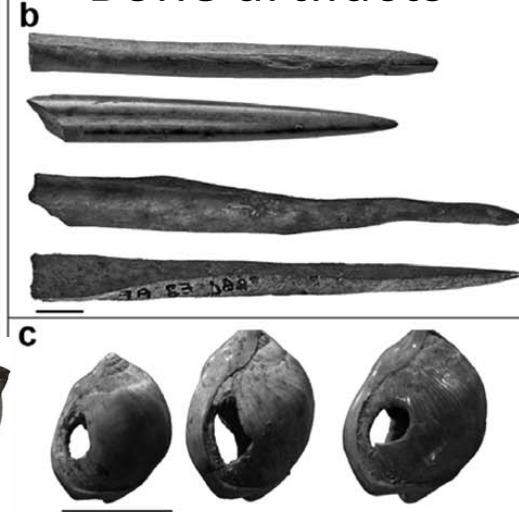
Engraved ocher



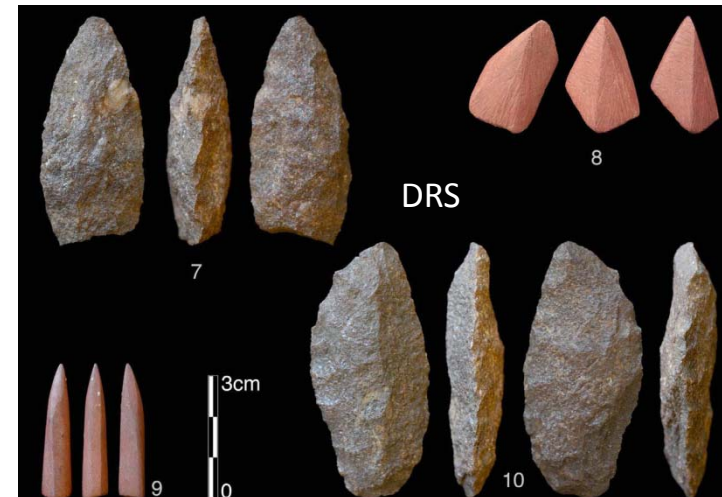
BBC

1 cm

Bone artifacts



Ground ocher



DRS

8

7

10

9



Shell beads



SIB

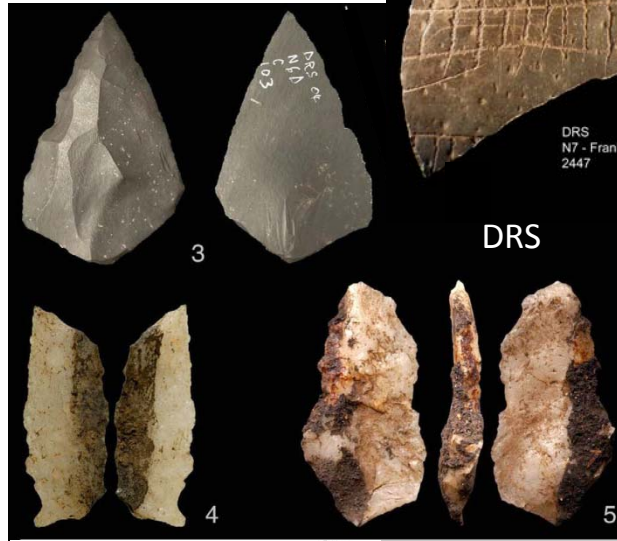
Howieson's Poort



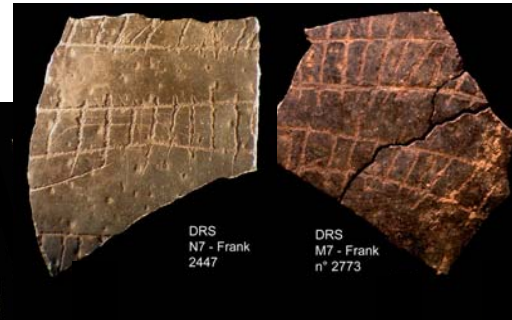
Backed
segments



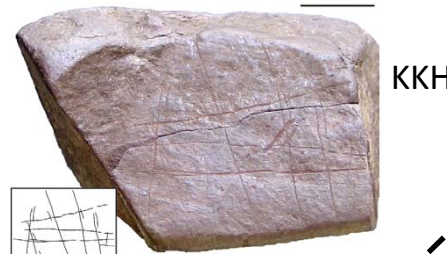
Unifacial
points



Engraved
OES

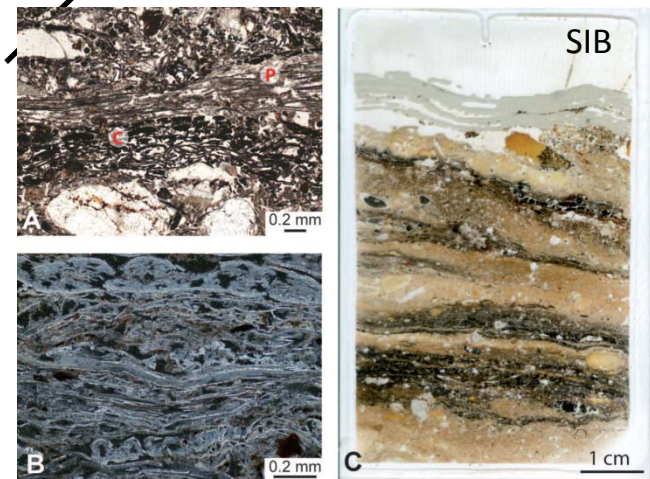


Post-HP



Engraved
ocher

Hearths
& bedding



Cultural comparisons



Artifact type	Pre-SB	SB	HP	Post-HP
Bifacial points (SB)	✓	✓	—	✓
Backed segments (HP)	—	—	✓	✓
Non-local raw materials	✓	✓	✓	✓
Hafted lithics	✓	✓	✓	✓
Extensive ocher processing	✓	✓	✓	✓
Bone tools	✓	✓	✓	—
Hafted bone tools	✓	✓	✓	—
Engraved bone	✓	✓	✓	—
Abstract engraving / ocher	✓	✓	✓	—
Abstract engraving / OES	—	—	✓	—
Shell beads	✓	✓	—	—

MSA - Southern Africa

Class 3: HP

Map of Southern Africa showing MSA sites for Class 3: HP. Sites are marked with purple dots and labeled. Dashed purple lines group sites into three regions: a coastal group (Hazenbont, Aar 1, Roekenbank 1, Apollo 11), an inland group (Kathu Pan), and an eastern group (Oakley Farm, Border Cave, Mumba Tsaba, Ngwenya Cave, Pekaia, Umkhlatzana). Other sites include Klein Kliphof, Klipfonteinrand, Anyokop, Blombos, Diepkloof Rock Shelter, Pongolapoort, Homburg Cave, Peder's Cave, Tlolet Cave, Nelson Bay Cave, Harrison's Pools, and Klasies River Main.

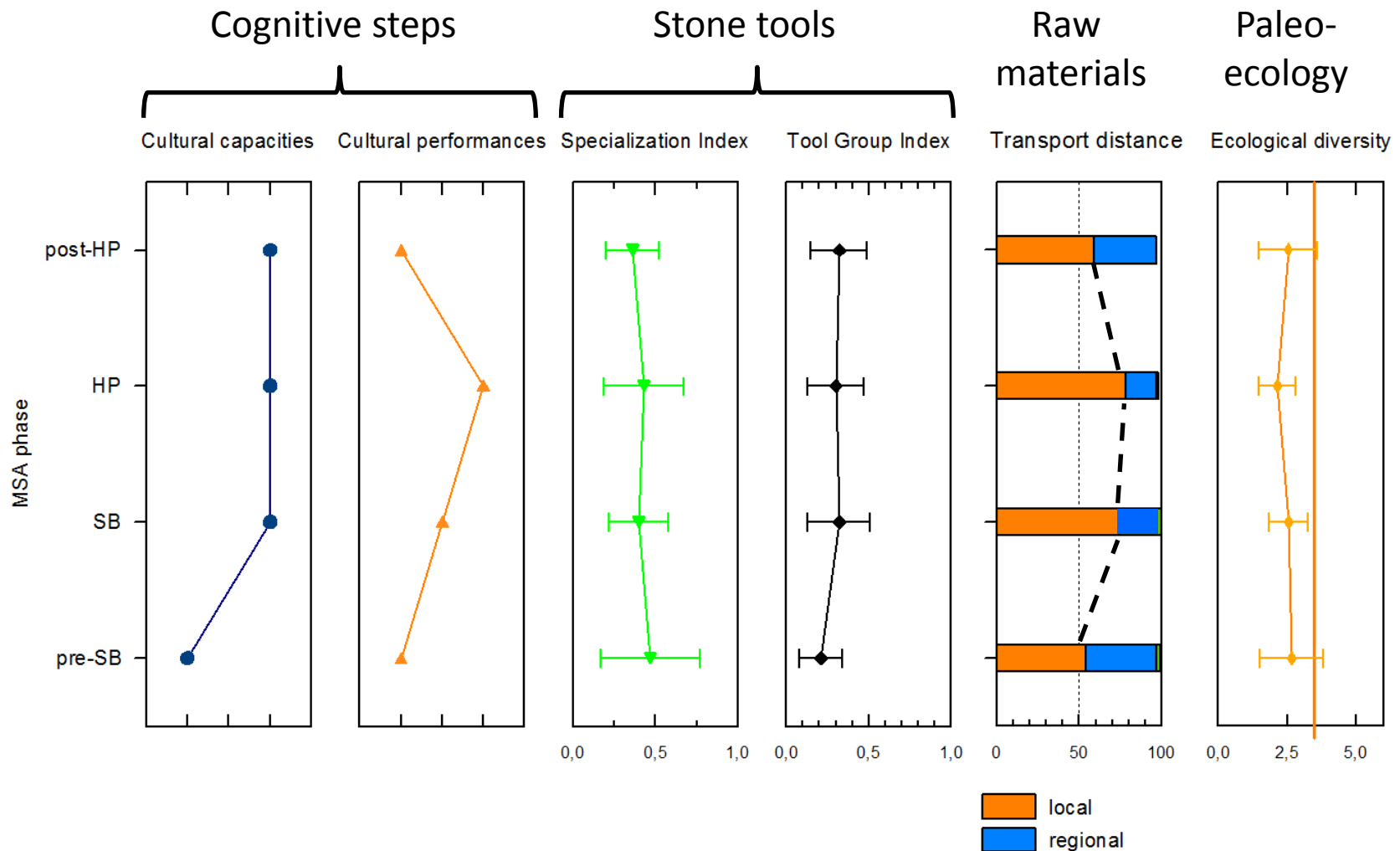


MSA - Southern Africa
Class 2: SB

Map of Southern Africa showing the distribution of early hominid sites. The map includes labels for various sites: Apollo 11, Rhino Cave, Ngobane Cave, Naledi Cave, Pongopong Cave, Baledaba Cave, Nata River Site, and Agila Cave. A dashed orange line outlines a large area in the north and east, and a dashed orange line outlines a smaller area in the south. A scale bar at the bottom indicates distances from 0 to 500 km.

SB

Results – archaeology & ecology

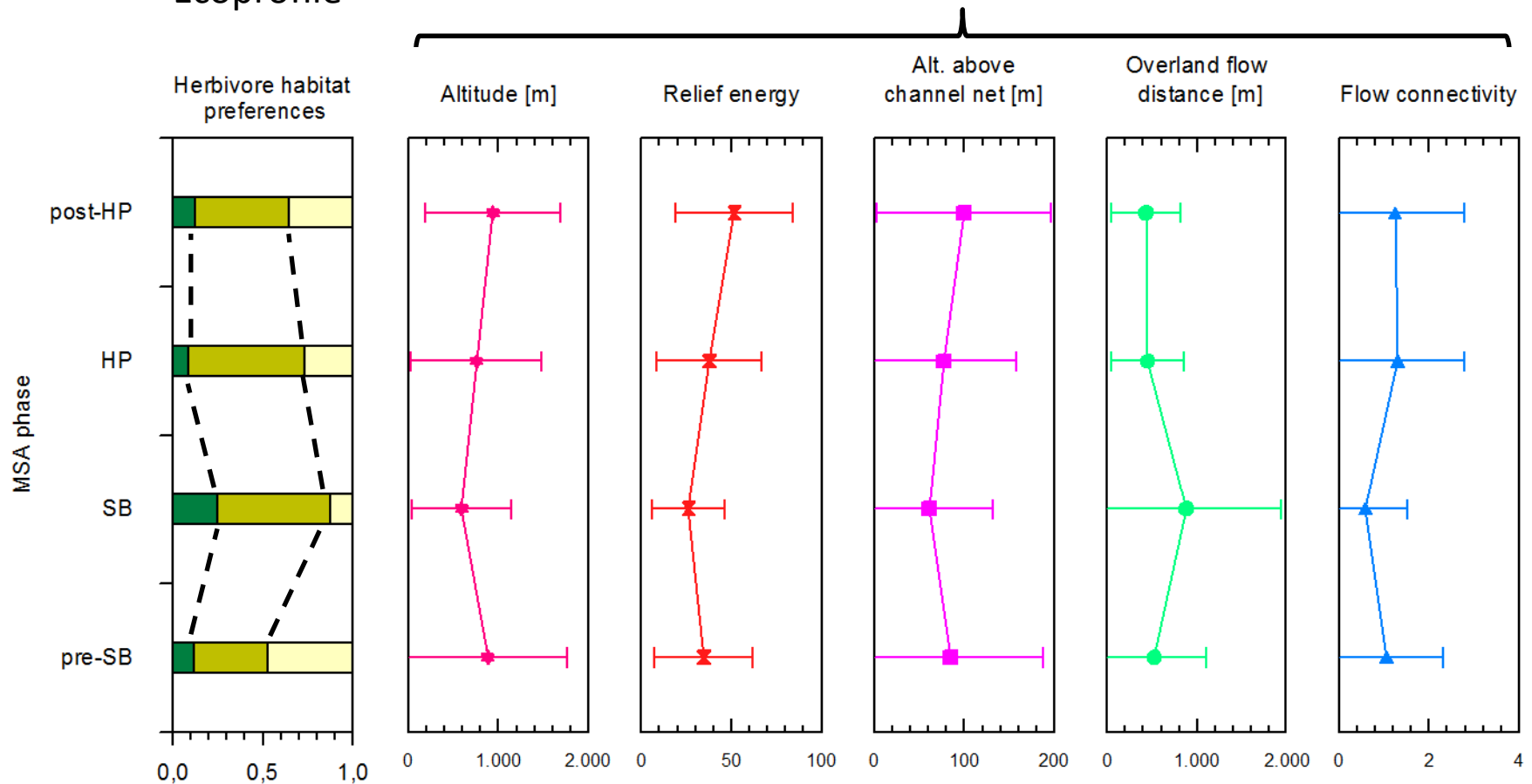


Results – habitat & landscape



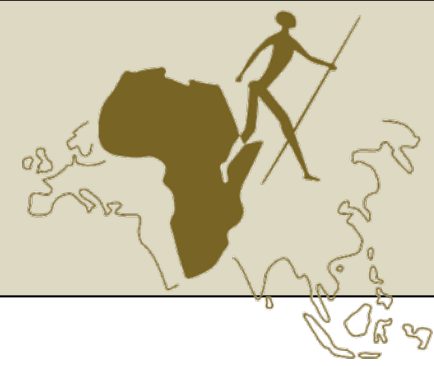
Ecoprofile

Site selection /geographical indices



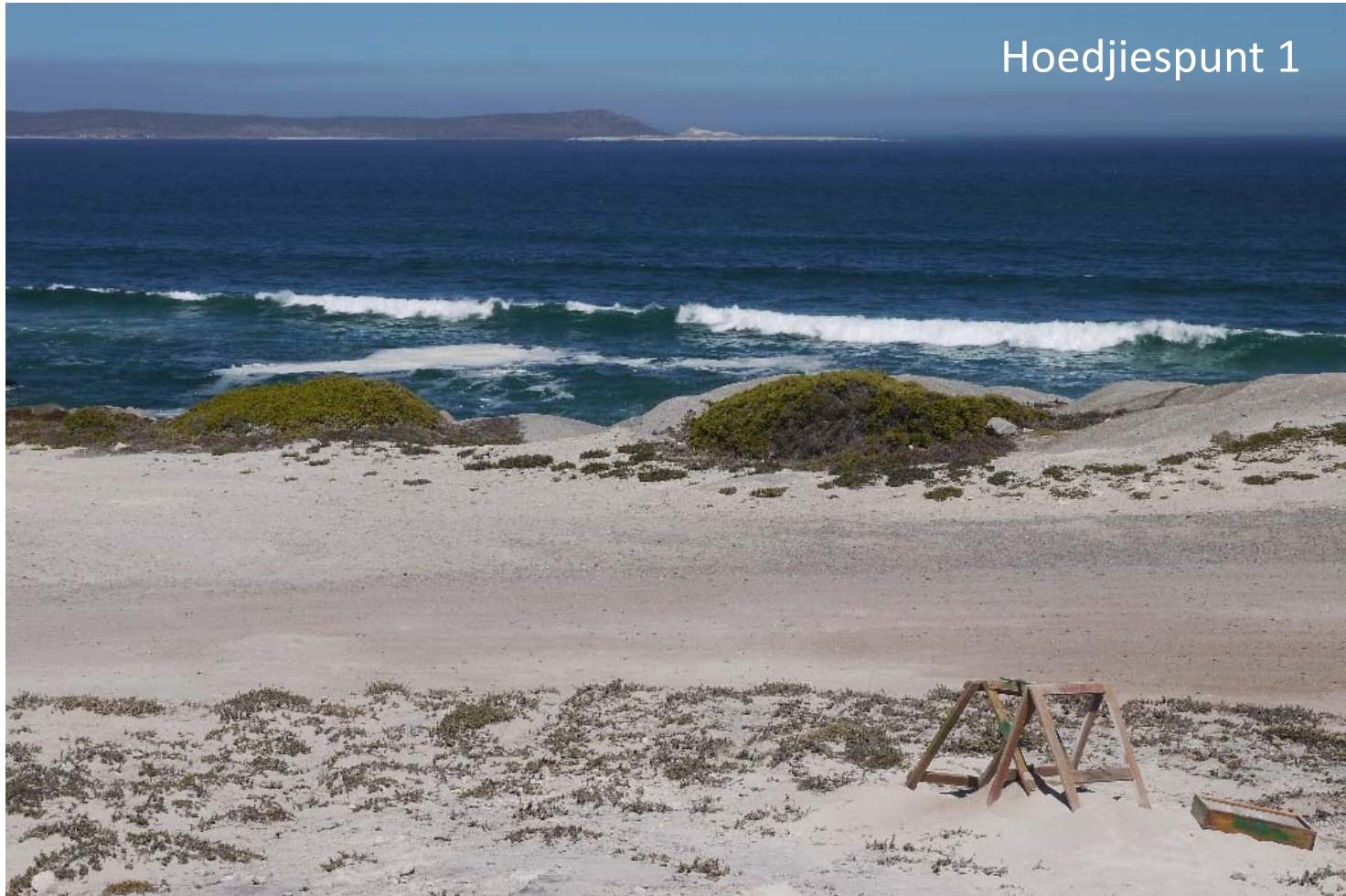
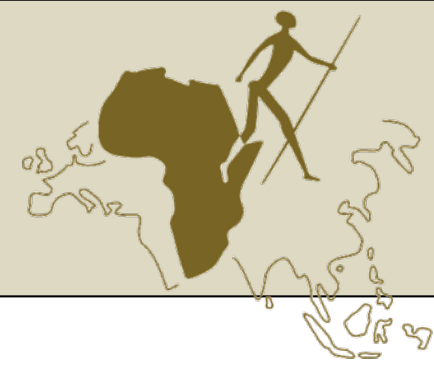
open
bush
closed

Conclusions



- Climate does not appear to drive human activity
 - At least, local environmental changes not in sync with pace of cultural adaptations
 - Cultural flexibility does increase
 - Adaptations accumulate, even though post-HP appears less complex
-
- Environmental deterioration? Loss of culture?
 - Demographic changes? Dispersal? Replacement?
-
- ✓ Similarities in MSA more important than differences

Thank you



Hoedjiespunt 1