AGU FALL METING

ADVANCING EARTH AND SPACES CERNICE

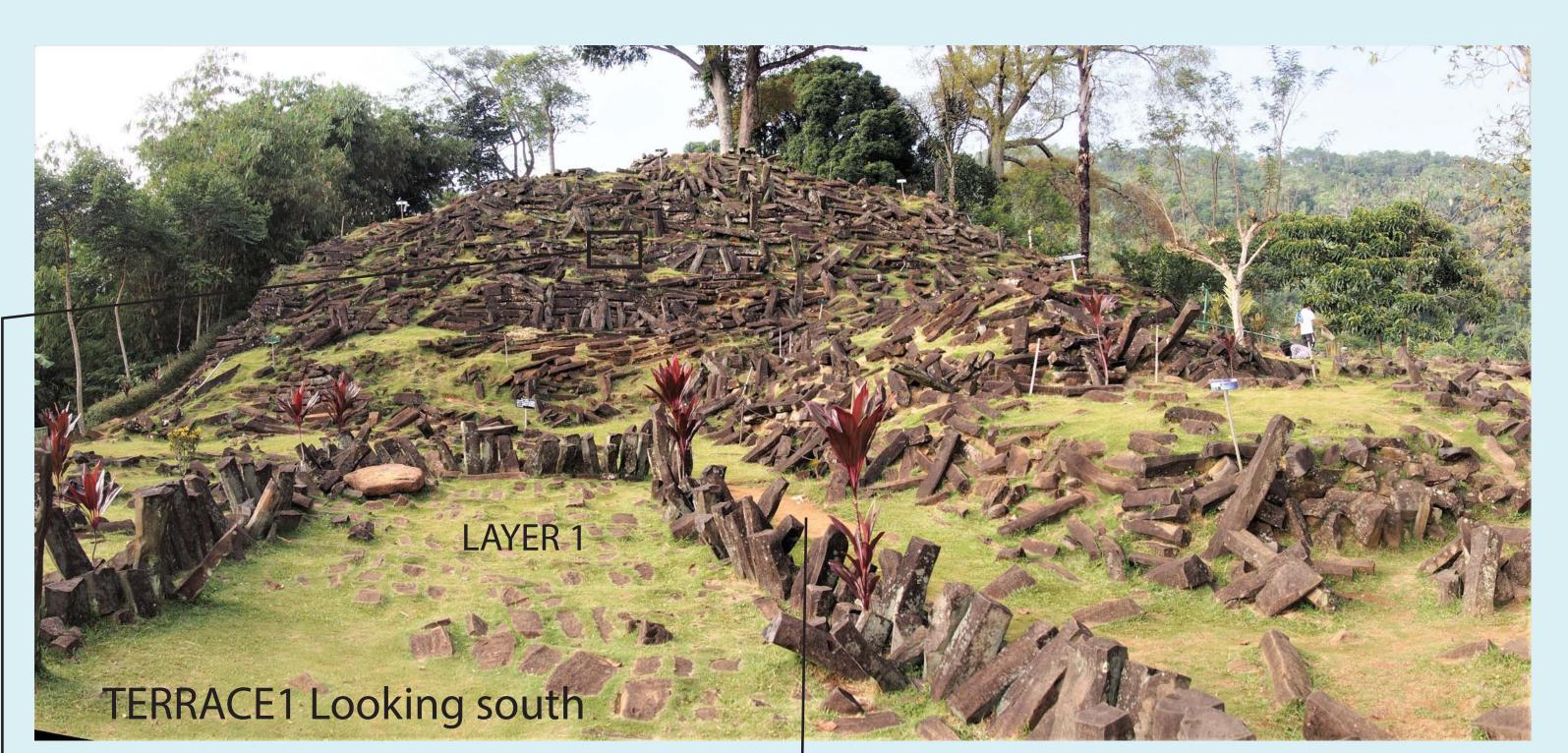
Washington, D.C. | 10-14 Dec 2018

NS33B - 0785

Evidences of large pyramid-like structure predating 10,000 Year BP at Mount Padang, West Java, Indonesia: Applications of geological-geophysical methods to explore buried man-made structures

BACKGROUND

Gunung Padang Megalithic site has been known since early 19 century but only recognized as ancient tombstone made of stacks of columnar-joint basaltic andesite on top of the mound. In fact, its exposure clearly shows that the youngest construction is built on top of an older, more sophisticated cultural rock layer. Besides, the morphology of the mound stands out as peculiarly much younger entity compared to the surrounded intensively steam-eroded, rough texture of the Tertiary volcanic rock complex. Hence, it deserves further investigations, particularly on what's lies beneath the megalithic site including suspected large chambers.



Exposed LAYER 2



GEOMAGNETIC

CORE Drilling

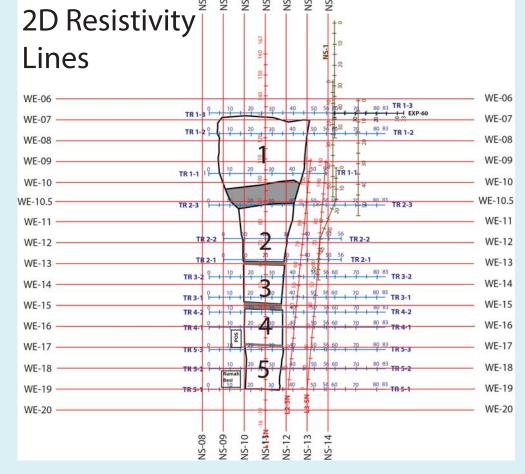
METHOD

We use various near-surface geophysical methods including multi-channel resistivity, ground penetration radar (GPR), seismic tomography and geomagnetic coupled with core drilling and excavations. Hence, we are able to compare and verify the results of one method to anothe for better interpretations of subsurface

MULTI-CHANNEL RESISTIVITY SURVEY We use SuperSting R8 with 58 and 112 electrodes (www.agiusa.com); use various electrode spacing to have wide spectrum of resolutions and depth of penetrations in order to illuminate shallow and deeper objects. We conducted 3D resistivity survey particularly to scan suspected large underground chamber(s).

GROUND PENETRATION RADAR We use SIR-2000 and 3000 of GSSI Units (www.geophysical.com) with various antenna including unshielded MLF, shielded 100Mhz and 250 Mhz; using various antenna frequency gives wide spectrum of resolution and depth of penetration for different purposes/targets. We con-

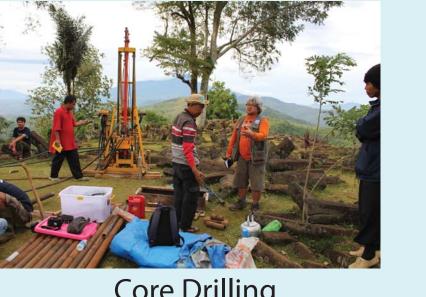
ducted dozens of 2-D line survey



SEISMIC TOMOGRAPHY SURVEY The equipment and sofwares are developed by the Rock Fluid Imaging Lab(http://www.rock-fluid.com/). The seismic sources are generated by hammer, vibrator, and specially-

conducted at 7(seven) sites around the top. Two sites has drilling depths 30-33 meters, the rest is about







GEOPHYSICAL SURVEY LINES





Visited by (Former) President of Indonesia and his cabinet in February 2014

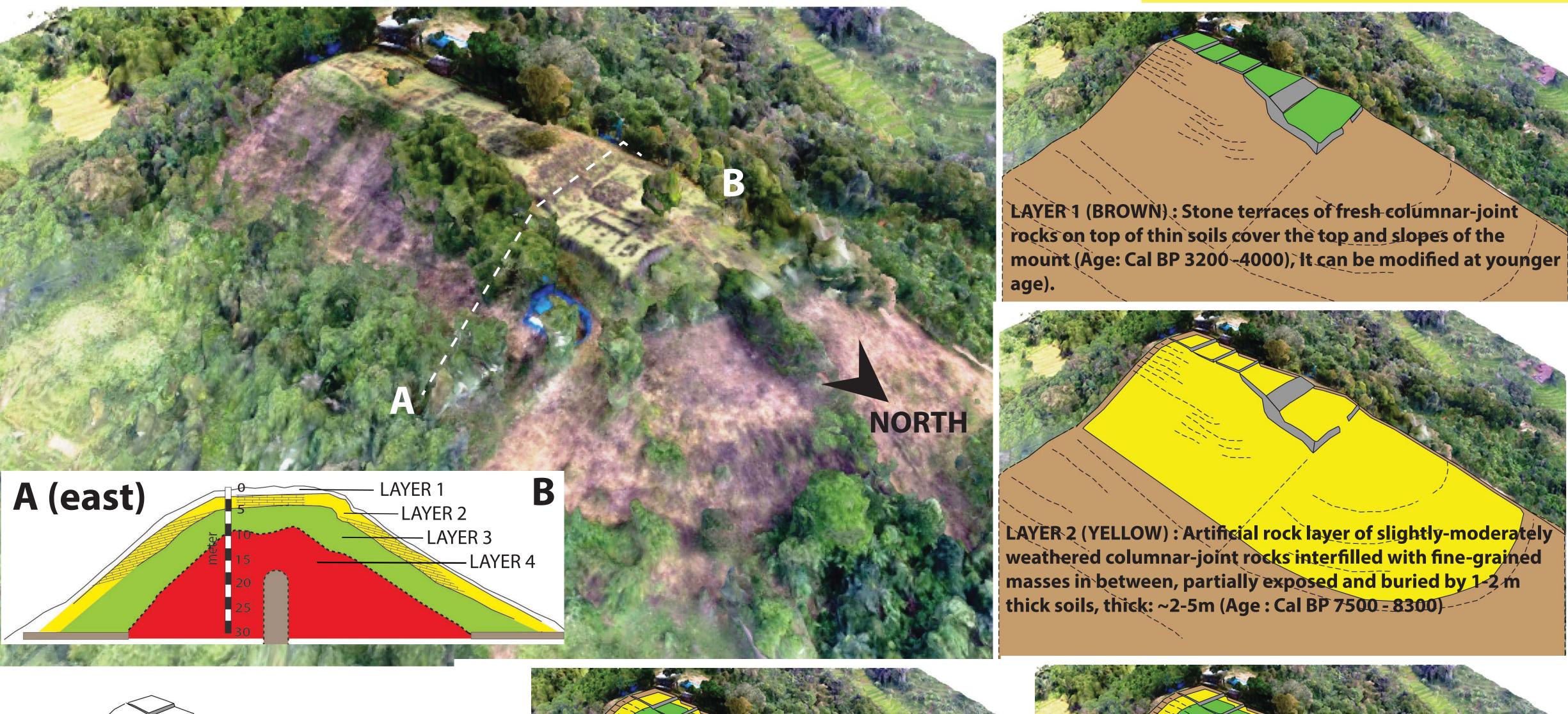
Danny Hilman Natawidjaja^{1,2} Andang Bachtiar^{1,3} Bagus Endar^{1,4}, Andri Subandrio^{1,5}, Mudrik R. Daryono^{1,2} ¹ The Integrated Independent Research Team of Gunung Padang (TTRM), ² RC Geotechnology, Indonesian Institute of Sciences (LIPI) ³ Maurel & Prom Oil Company, France, ⁴ Dept. Geophysics, Institute Technology Bandung ⁵ Dept. Geology, Institute Technology Bandung

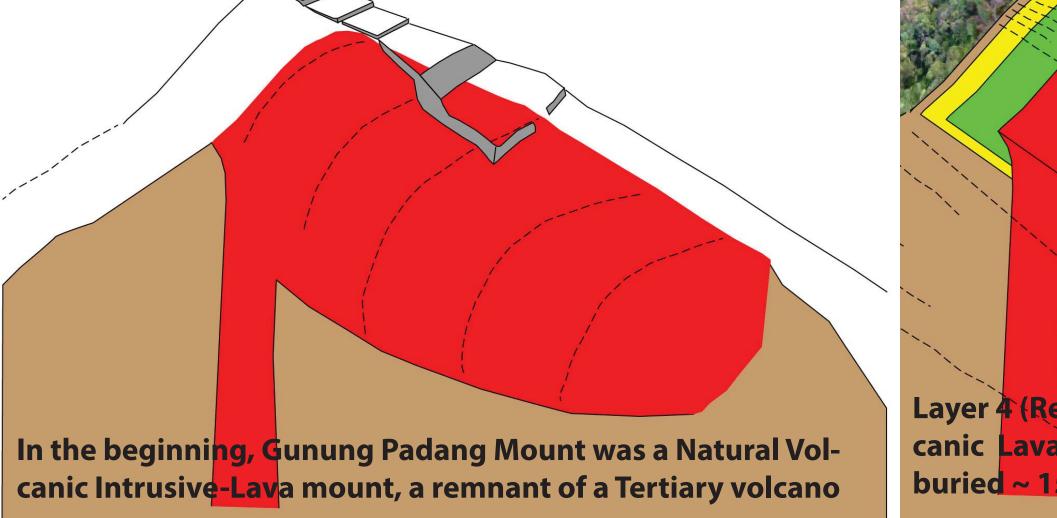
Correspondence:: danny.hilman@gmail.com

ABSTRACT

Mount Padang archeological site has been known since late nineteen century as a megalithic complex that sits on top. Our studies proves that the structure does not cover just the top but also wrap around the slopes covering about 15 ha area at least. Comprehensive geophysical surveys combining ground penetration radar (GPR) and multi-channel resistivity methods, seismic tomography augmented by bore-holes coring data and archeological excavations, show further that the structures are not only superficial but rooted into greater depth. The structures are not built at once but consisting several layers from consecutive periods. The uppermost layer on the surface consists of horizontal piles of basaltic columnar rocks forming step-structure terraces and decorated by exotic arrangements of stand-up rock columns forming walls, paths and spaces. The second layer, which had been previously misinterpreted as natural rock formation, buried 1-3 meters beneath the ground surface, is a several-meter thick fills consisting of more compact and advance arrangement of similar columnar rocks in fine-grain matrix. The third layer is also artificial arrangement of rock fragments with various kinds that extent down to about 15 meter deep. The third layer sits on fractured, massive basaltic lava tongue. The survey also reveals evidences of large underground cavities or chambers. Results of preliminary radiocarbon dating indicates that the first layer was built around Cal BP 3,000 - 3,500. The second layer was built around about Cal BP 7,500 - 8300. The third layer was built prior to Cal.BP. 9,500, and could be as old as Cal.BP.28,000.

SUMMARY: 3D AERIAL PHOTOGRAPHY OF GUNUNG PADANG PYRAMID AND INTERPRETATIONS OF ITS SUBSURFACE STRUCTURES BASED ON GPR, MULTI-CHANNEL RESISTIVITY, AND SEISMIC TOMOGRAPHY SURVEYS, CORE DRILLINGS, **EXCAVATIONS, AND RADIO-CARBON DATING ANALYSIS**





ECHO-2 Trench Photo

VOID/CHAMBER

LAYER-3

INDEX MAP OF TRENCHING

AND CORE DRILLING SITES

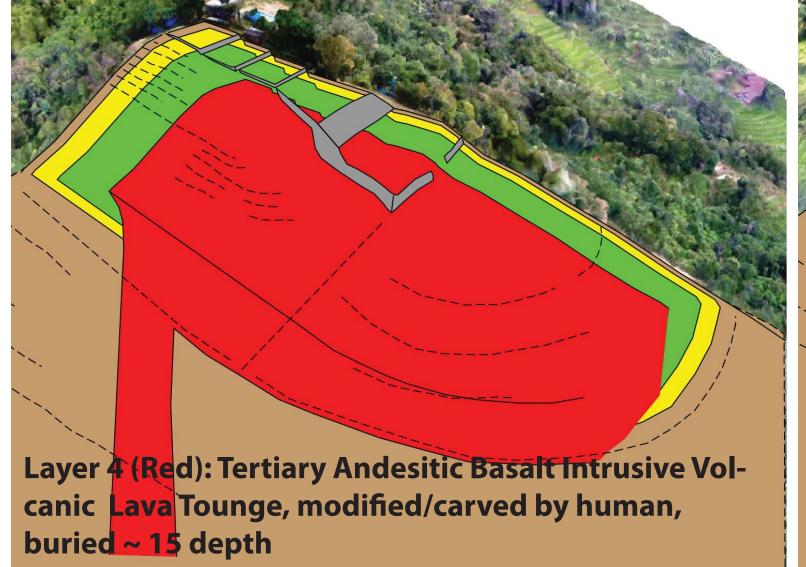
0 15 30

(Sundanese Heir

loom) buried

under 3-m Cal

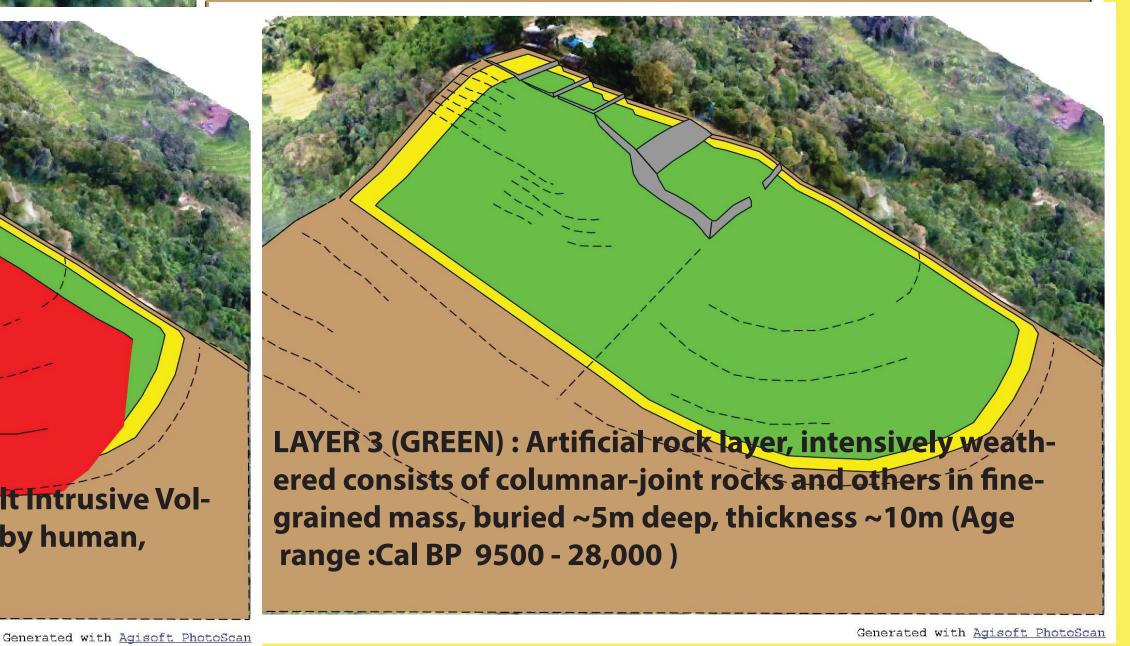
soil fill at DELTA



CHARLIE-1 Trench on East Slope

FANTA Trench on Terrace 2

LAYER 2 is exposed on surface of TERRACE 2

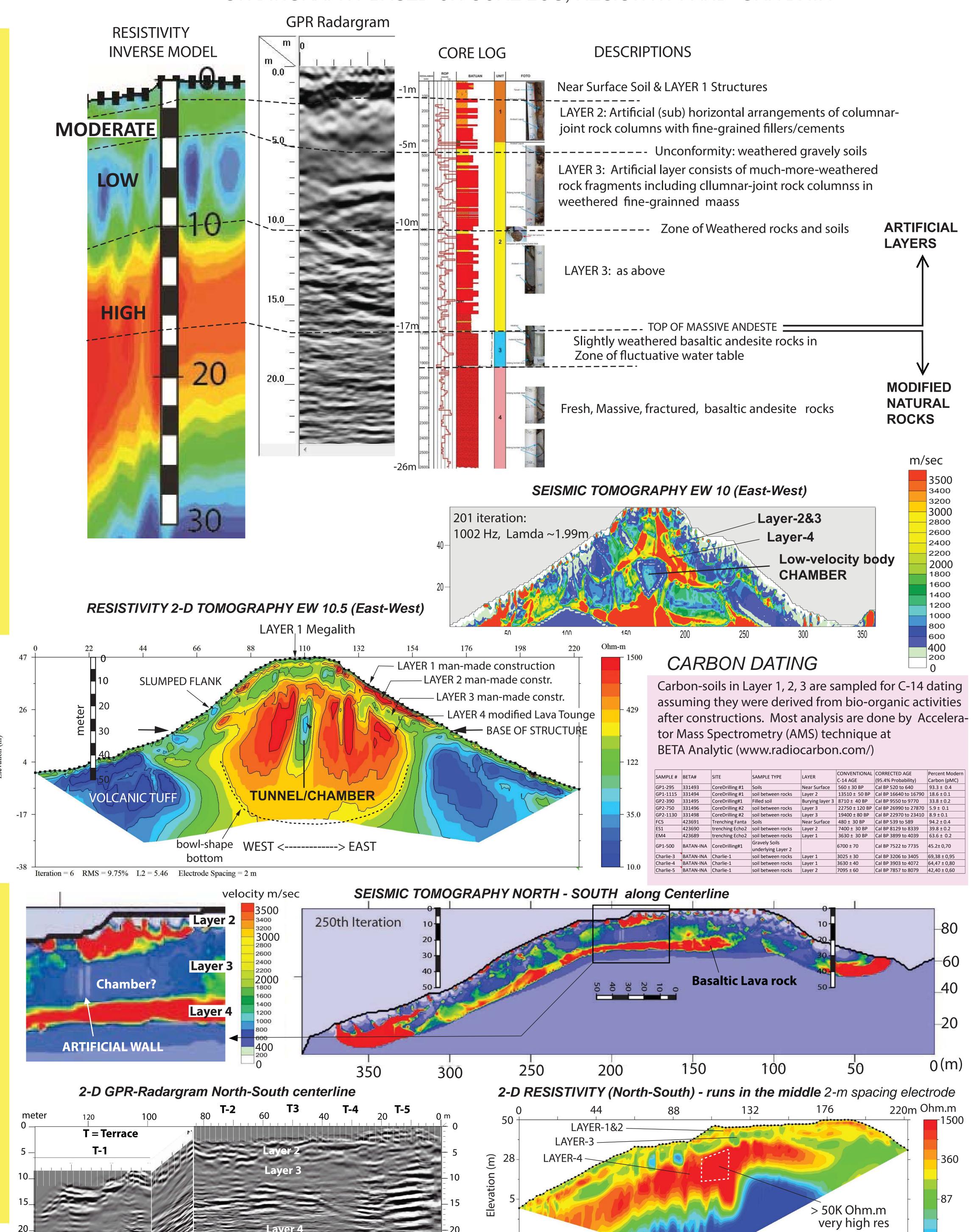


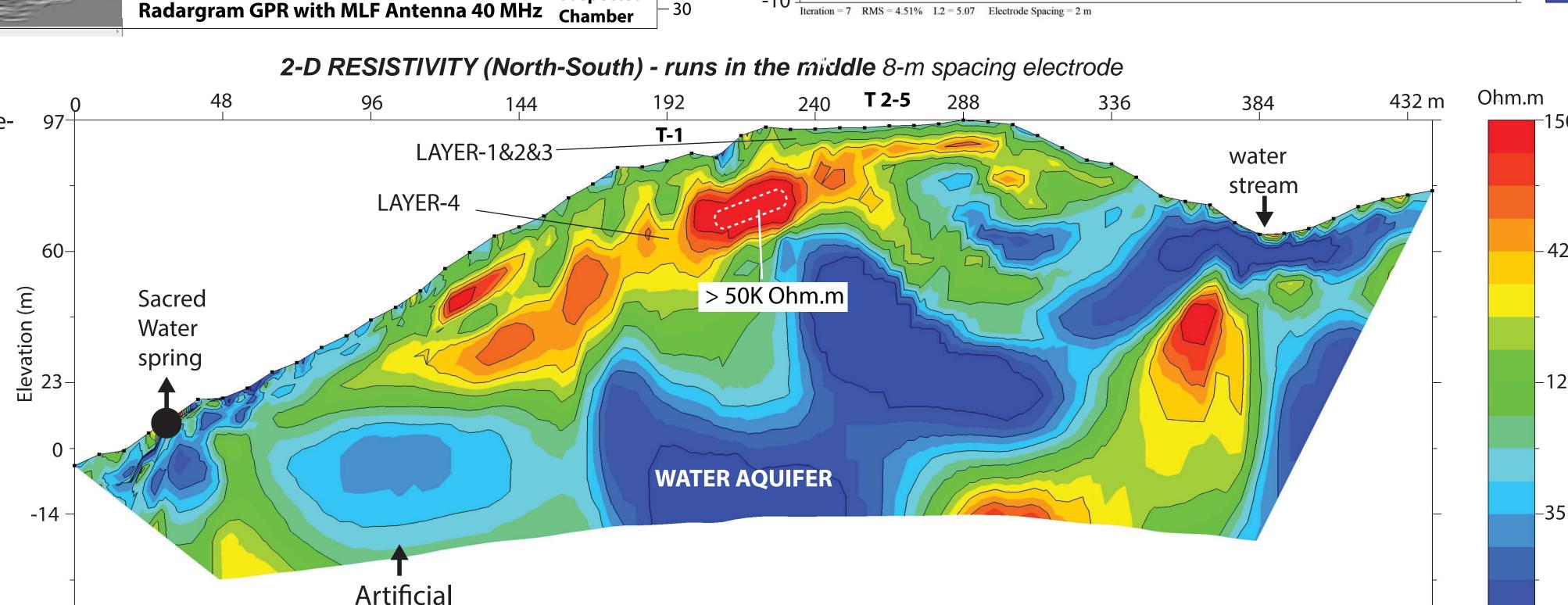
3D Resistivity Contour Plot -D Slices of the 3D resistivity tomography Very-high resistivity: Chamber

3-D RESISTIVITY TOMOGRAPHY - Spacing 6-m grid: Focusing on Chambers

RESULTS







Water Reservoir???

Iteration = 7 RMS = 8.07% L2 = 5.02 Electrode Spacing = 8 m