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AUSTRONESIAN DIASPORA
A NEW PERSPECTIVE

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Proceedings the International Symposium
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PREFACE OF PUBLISHER

This book is a proceeding from a number of papers presented in The International Symposium on Austronesian Diaspora on 18th to 23rd July 2016 at Nusa Dua, Bali, which was held by The National Research Centre of Archaeology in cooperation with The Directorate of Cultural Heritage and Museums. The symposium is the second event with regard to the Austronesian studies since the first symposium held eleven years ago by the Indonesian Institute of Sciences in cooperation with the International Centre for Prehistoric and Austronesia Study (ICPAS) in Solo on 28th June to 1st July 2005 with a theme of "the Dispersal of the Austronesian and the Ethno-geneses of People in the Indonesia Archipelago'' that was attended by experts from eleven countries.

The studies on Austronesia are very interesting to discuss because Austronesia is a language family, which covers about 1200 languages spoken by populations that inhabit more than half the globe, from Madagascar in the west to Easter Island (Pacific Area) in the east and from Taiwan-Micronesia in the north to New Zealand in the south. Austronesia is a language family, which dispersed before the Western colonization in many places in the world. The Austronesian dispersal in very vast islands area is a huge phenomenon in the history of humankind. Groups of Austronesian-speaking people had emerged in ca. 7000-6000 BP in Taiwan before they migrated in 5000 BP to many places in the world, bringing with them the Neolithic Culture, characterized by sedentary, agricultural societies with animal domestication.

The Austronesian-speaking people are distinguished by Southern Mongoloid Race, which had the ability to adapt to various types of natural environment that enabled them to develop through space and time. The varied geographic environment where they lived, as well as intensive interactions with the outside world, had created cultural diversities. The population of the Austronesian speakers is more than 380 million people and the Indonesian Archipelago is where most of them develop. Indonesia also holds a key position in understanding the Austronesians. For this reason, the Austronesian studies are crucial in the attempt to understand the Indonesian societies in relation to their current cultural roots, history, and ethno-genesis.

This book discusses six sessions in the symposium. The first session is the prologue; the second is the keynote paper, which is Austronesia: an overview; the third is Diaspora and

Inter-regional Connection; the fourth is Regional highlight; the fifth is Harimau Cave: Research Progress; while the sixth session is the epilogue, which is a synthesis of 37 papers.

We hope that this book will inspire more researchers to study Austronesia, a field of never ending research in Indonesia.

Jakarta, December 2016
Publisher

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Regional Highlights

REFRAMING THE ISLAND SOUTHEAST ASIAN NEOLITHIC: LOCAL VS REGIONAL ADAPTATIONS

Peter V. Lape, Fadhila Arifin Aziz, Dian Ekowati, Jenn Huff, Wuri Handoko, Andre Huwae, Michael Lahallo, Simon Latupapua, Adhi Agus Oktaviana, Emily Peterson, Marlon Ririmasse, Karyamantha Surbakti, Joss Whittaker, Lauryl Zenobi

Introduction

Why did Island Southeast Asians adopt a farming economy beginning 4,000 years ago after hunting and foraging wild foods for tens of thousands of years? What was the process of this transition and what environmental factors might have influenced the decisions these people made? We are tackling these questions through a multi-year survey and excavation project on large islands and smaller atolls and islets in the Maluku province of eastern Indonesia, especially Seram, Aru and other nearby islands. Our first survey and excavation targeted Seram, a large island in an archipelago of smaller islands that was most likely a hub for regional interaction. Little is known about its human past, but Seram's proximity to smaller islands with different ecological constraints suggests that it may have provided a jumping-off point for the development of Neolithic technologies. This project will hopefully increase our understanding of eastern Indonesian Neolithic adaptations, and will determine whether the early Neolithic began as a fishing adaptation on small islets, or had earlier progenitors on larger islands. Ultimately, our results should be relevant to questions of Neolithic transitions and human-environment interactions in other tropical insular environments. Survey and exploration of SE Seram Island and nearby atolls conducted in October 2015 has yielded preliminary data on settlement and landscape use across the Neolithic transition and provide a foundation for subsequent research. Future work will expand to include similar projects in Aru and other central and southeast Maluku island systems.

Previous research

Prevailing theories suggest that the first farmers of Island Southeast Asia (ISEA) were migrants from Taiwan, who brought with them a new suite of technologies and languages (Bellwood 2005, Bellwood 2007, Bellwood 2011). Competing theories suggest that just the ideas and technology, rather than actual people, made the journey from Taiwan or from several different 'homelands' (Denham 2009, Spriggs 2011). Most theories look to outside influences (people or technology) to explain these changes.

In the past decade, the fit between these theories and archaeological data has become less comfortable. In some cases, elements of the Neolithic “package” (e.g. domestic animals and plants, pottery, pelagic fishing technology, ground stone or shell tools) do not occur together (Amano et al. 2013, Anderson 2008). Some elements, such as fishing technology, are now known to appear much earlier (Veth et al. 2005, O'Connor et al. 2011), while others, such as rice, appear much later or not at all (Denham 2013, Barker and Richards 2013). Domestic animals such as pigs and rats have turned out to have multiple homelands, and most of these animals found in ISEA do not originate in Taiwan (Lum et al. 2006, Larson et al. 2007). We still know very little about domestic plants, but the evidence available suggests that many ISEA cultigens had ISEA or New Guinea origins rather than Taiwan or mainland Asia (Denham et al. 2004, Denham 2009, Haberle et al. 2012).

Our research on well-stratified open Neolithic sites on Pulau Ay (PA1 and PA12) in the Banda Islands, (100km SW of Seram) suggests that the Neolithic pattern did not appear all at once, as we might expect with a migration scenario. Instead, we interpret the archaeological record there to show a step-by-step process from the first appearance of pottery that takes perhaps 100-200 years to reach “full” Neolithic (Lape et al. in prep, Peterson and Lape in review). A similar pattern has emerged for the Lapita period in the Bismarck Archipelago (Specht et al. 2014). The first century or two of Neolithic habitation was heavily maritime oriented, similar to earlier fishing camp sites on Pulau Ay dating to 7000 BP (e.g. site PA11), though with the novel addition of fine tempered, slipped pottery. Domestic animals (pig, rat, dog, chicken) appear about 100 years later in the sequence, accompanied by a significant change in the pottery technology to coarser wares, and a decrease in fish and shellfish. Although evidence of plant use at these sites has not been well preserved, starch residues on both the early and the later pottery indicate yams, which have many wild progenitors in ISEA and New Guinea. In short, the first pottery users on the Banda Islands appear to have been predominantly fishers rather than farmers.

As Robb notes in his discussion of the European Neolithic, decisions about the adoption of technology or other cultural traits happens on a local level in response to immediate conditions, while large scale trends emerge out of the cumulative effects of these local decisions (Robb 2013). Similarly, the latest archaeological evidence from ISEA demand new explanations that focus on the process of adaptation to each Neolithic element individually and at different times, and consider how these new adaptations might have made sense at a diversity of local scales rather than a single broad regional scale.

Hypotheses and Research Questions

Our new model is as follows: Although people in eastern ISEA had fished since they first arrived 40 or more kya, the adoption of pottery and yam horticulture may have been the key to allow more extensive exploitation of small, dry, remote islands and their highly productive, previously inaccessible reefs. Fresh water transport and storage would have been a problem that settlers to dry islands such as Pulau Ay and the small islets around Seram would have to solve (c.f. Reepmeyer et al. 2014). The earliest fine tempered slipped wares that we found in the early Neolithic layers at Palau Ay are well suited to water storage. Supplementary food sources would have posed another requirement for the permanent occupation of small dry islands. Yam or taro gardens, planted but left untended, would have extended the length of time fishing parties could stay in these islands. Eventually, full time habitation of these small islands became not only possible but perhaps necessary to defend these productive reefs from other groups. Year-round residence would have required alternate protein sources during peak monsoon months when fishing is difficult or impossible. At this point, pigs and other domestic animals were brought in as an alternate protein source and pottery became dominated by coarse-grain tempered cooking vessels rather than fine-grain tempered water storage vessels.

Our project is designed to test this model. On Seram, we will investigate the Neolithic transition in two geographies. There are diverse terrestrial environments that likely enabled lengthy pre-Neolithic forager occupation on Seram proper, including abundant surface fresh water. The fringing reefs are relatively small and subject to degradation from sediment transport, and may have been negatively impacted by increased sedimentation accompanying forest clearance associated with agriculture (c.f. Spriggs 1997). Meanwhile, the reefs, atolls and small islets off the SE coast of Seram – farther from the largest sediment-carrying rivers – would have been extremely attractive to fishers and would have been an ideal testing ground for developing strategies like using fine tempered, slipped pots for water storage. Therefore, we expect this pottery to be present in greater abundances in the dry islands and less abundant or absent on the main Seram coast. On Seram, we expect pre-Neolithic sites will be found in areas with ready access to freshwater whereas Neolithic period occupation requiring water storage will be focused in areas with the most productive, offshore reef systems. We predict that the offshore islets will have a similar occupation record to Pulau Ay, with sporadic pre-Neolithic fishing use, and early Neolithic layers containing fine, slipped pottery but no domestic animals.

As data on past precipitation and sedimentation are important for validating the model proposed here, and the paleoenvironment of Seram is poorly understood, we collaborated with paleoclimate specialist Dr. Julian Sachs from the University of Washington to collect and analyze a rainfall proxy record from mangrove peat sediments from large mangrove swamps adjacent to Airnanang on Seram and on Pulau Ujir in the Aru group. Our project team collected data about exchange and connectedness from pottery and lithic trace element analyses. These two records will be a source of testable hypotheses of possible causal factors in the Neolithic transition. Rainfall would clearly have been an important factor for farmers, especially on small islands that lack permanent surface water supplies such as rivers or lakes. Trade and exchange might have mitigated some of the risk of settling on small islands, effectively expanding the resource base to include a wider variety of ecosystems and allowing small island dwellers to weather unfavorable climate periods.

Results of 2015 Seram Survey

The area of SE Seram was the subject of a reconnaissance survey by Lape in 1998 where several possible open Neolithic sites were identified in the vicinity of Rumadan village. Additionally, a team from the Pusat Penelitian Arkeologi Nasional and Balai Arkeologi Ambon, led by Dr. Truman Simanjuntak, surveyed as far as Waru in early 2012, during which a cave site with possible Neolithic occupation was identified.

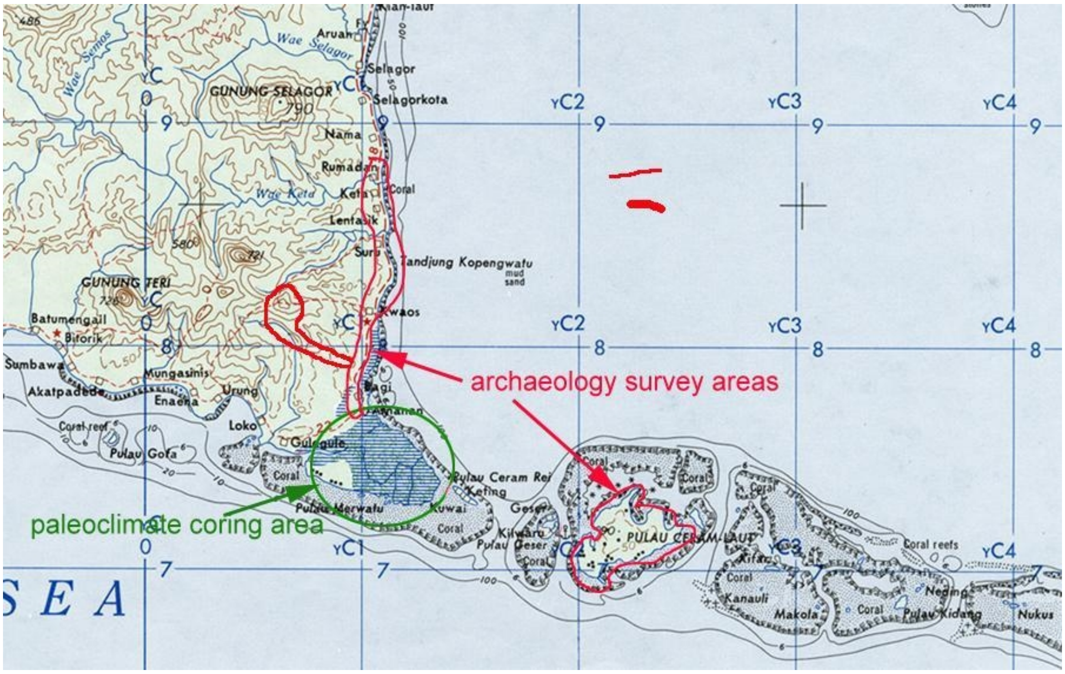

Figure 1. 2016 survey area, East Seram and Seram Laut

Based on this preliminary information, we conducted an initial rapid reconnaissance archaeological survey of coastal Seram Island from Rumadan to Airnanang on the SE tip of Seram, of a cave near Waru, NW of Rumadan, and of the small offshore island of Seram Laut, from October 20-30, 2015 (Figure 1). A subset of the team traveled to Pulau Ujir in early November to sample the mangrove sediments there and also auger at possible sites (Figure 2). The team was comprised of archaeologists from the University of Washington, the Pusat

Penelitian Arkeologi Nasional and the Balai Arkeologi-Ambon (Figure 3). On Seram, we traveled by car to Kian Darat, then transferred to a motorized longboat to our survey sites, setting up a home base in Airnanang (for survey of eastern Seram), then Geser (for survey of Seram Laut). The Pulua Ujir team traveled from Ambon to Dobo by plane, then to Pulau Ujir by motorized longboat.

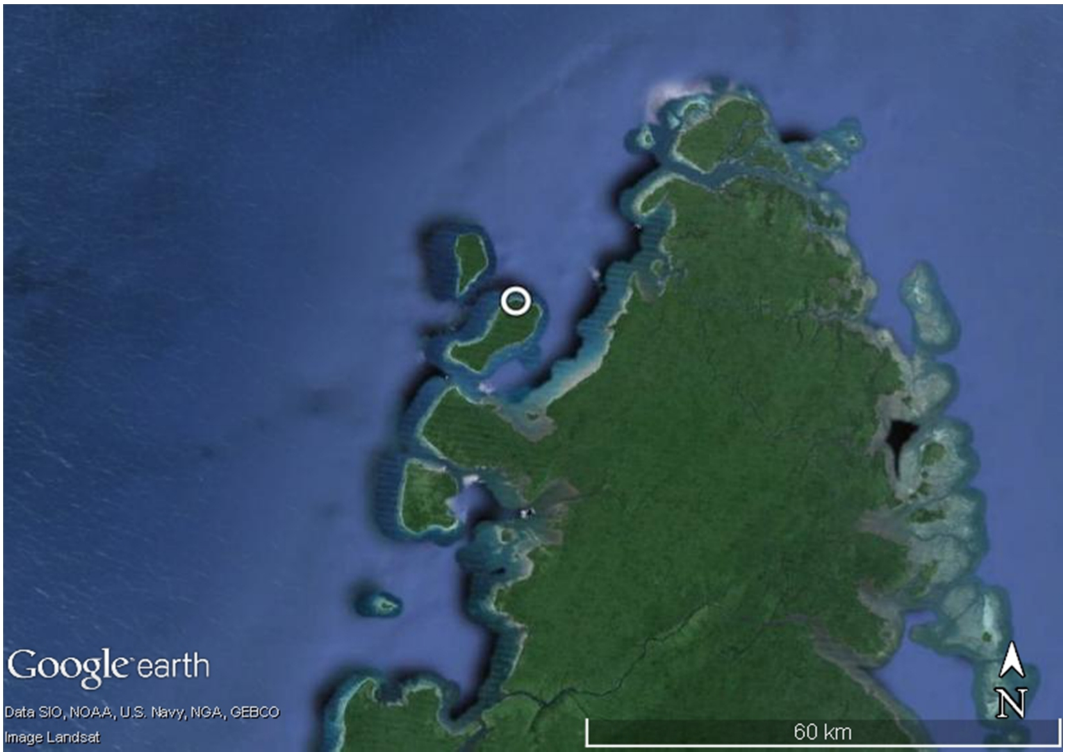

Figure 2. Satellite image of northern Aru showing the mangrove sediment core sample site on Pulau Ujir. Image: Google Earth.

On Seram and Seram Laut, the team followed the coastline and nearby inland areas, looking for surface earthenware pottery, stone tools and house platforms. We interviewed residents of settlements along the way for their knowledge of surface finds, especially farmers, who often encounter pottery during planting and field preparation. The team investigated known caves and rockshelters and walked to areas of karst towers and hills likely to have cave formations. Each team member carried a camera and GPS (or combined instruments) to record tracks, site locations and other identifying information. Sites with excavation potential were tested with augers and/or shovel probes to collect samples for radiocarbon, luminescence and elemental analyses. We identified nine previously unrecorded archaeological sites during this survey, including open sites, rockshelters and rock art sites.

Figure 3. Augering at Liang Watu Tewa, Seram

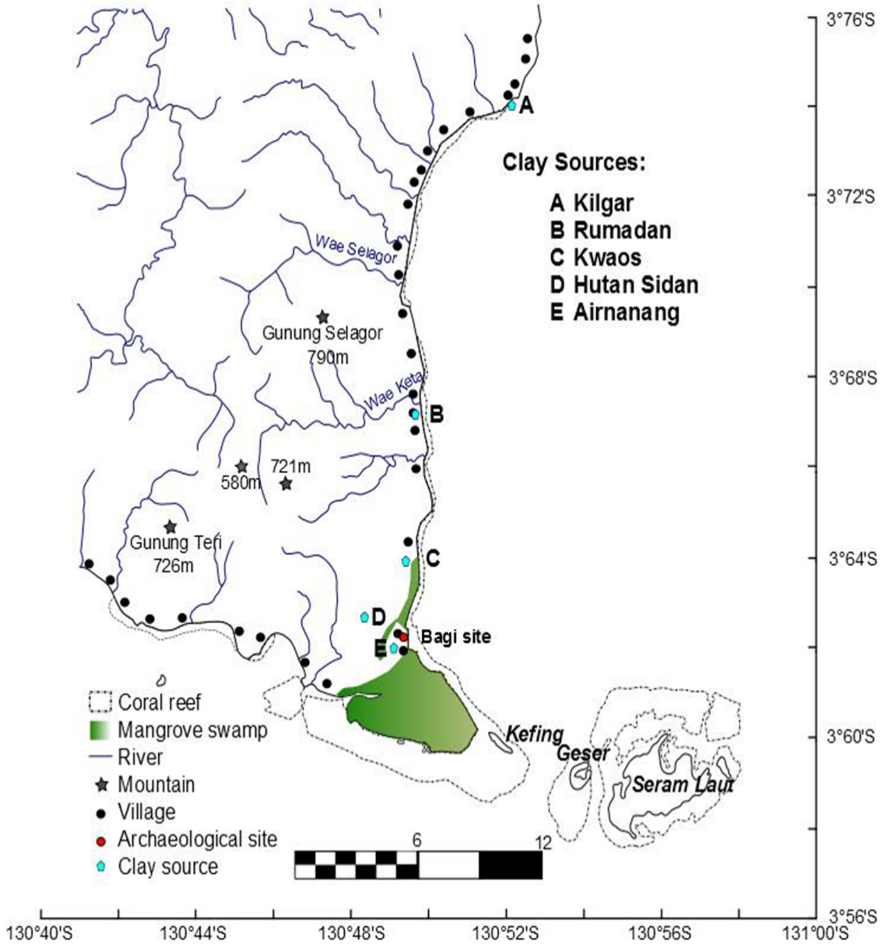

Figure 4. Map of East Seram showing clay sources samples during 2015 field season

We also collected clay and temper source samples from a variety of locales guided by local memories of pottery making. See figure 5 for a map of pottery and clay collection sites.

We collected mangrove sediment cores for paleoclimate analysis, recovering nearly 100 cores up to 1.5 m deep from two mangrove zones in Seram and Ujir. These cores can provide proxy records of rainfall from lipid profiles (c.f. Sachs and Myhrvold 2011, Sachs et al. 2009). See figure 6 for an example of core collection activity on Seram.

Figure 5. Mangrove sediment core collection, Seram

Results of Radiocarbon Dating:

A total of 19 radiocarbon samples from archaeological and paleoenvironmental sites were submitted for AMS dating to Direct AMS (Seattle, Washington, USA). 12 samples were tested from archaeological sites on Seram Island (including two samples from Hatusua cave in NW Seram previously excavated by a team from Balai Arkeologi Ambon), and 3 from sites on Ujir Island. Additionally, 4 mangrove sediment core samples taken for paleoclimate analysis were dated, using bulk organic sediments from the bottoms of the deeper cores, 3 from Seram and 1 from Ujir. Results are summarized in table 1 below.

Table 1. Radiocarbon dates from Seram and Ujir

sample #	location notes	material	Lab ID	d13C	age BP	1s error
Seram Island Archaeological Sites						
ARNGEKS1/2015-1	Bagi SP1 Layer 1 14cmbs Shell Sample 2	conus sp.	D-AMS 013934	-0.3	940	28
ARNGEKS1/2015-3	Bagi SP1 Layer 2 22cmbs	charcoal	D-AMS 013935	-29.4	268	25
ARNGSV/2015-3	Base of Bukit Kiliotek	conus sp.	D-AMS 013927	2.7	1,182	22
ARNGSV/2015-1	Bagi Beach cut 1-23cmbs, associated with lithic (collected)	charcoal	D-AMS 013936	-25.0	modern	
HTS18-2	Hatusua S1B5 spit 3 (x=57, y=70, z=40)	bivalve	D-AMS 013933	-0.8	1,092	24
HTS18-1	Hatusua S1B5 spit 3 (x=18, y=55, z=43)	charcoal	D-AMS 013937	-27.1	489	26
KLBDCR1/2015-2	Liang Kilbidi/Kilbadir Auger1 50-65 cmbs	bivalve	D-AMS 013926	-9.9	3,584	24
KLBDCR1/2015-1	Liang Kilbidi/Kilbadir Auger1 50-65 cmbs	shell	D-AMS 013931	-13.6	3,607	27
LNFG2/2015-1	Liang Fanga2 Surface Collection	bivalve	D-AMS 013929	1.2	4,850	28
LWTW/2015-1	Liang Watu Tewa Surface Collection	bivalve	D-AMS 013930	-1.4	4,086	28
TULK/2015-1	Tulak Surface Collection	bivalve	D-AMS 013928	-5.0	775	24
WTSK/2015-1	Watu Sika	Oyster sp.?	D-AMS 013932	-8.1	15,367	56
Seram Island Mangrove Cores						
ARNGCR1/96-97	Airnanang mangrove cores	sediment	D-AMS 014453	-32	1,001	28
ARNGCR4/146-147A	Airnanang mangrove cores	sediment	D-AMS 014454	-22.3	1,261	27
ARNGCR4/146-147B	Airnanang mangrove cores	sediment	D-AMS 014451	-26.5	1,197	26

sample #	location notes	material	Lab ID	d13C	age BP	1s error
Ujir Island Archaeological Sites						
UJMSFBR3.1	Maisei Fana Auger 5a, 16-42 cmbs	charcoal	D-AMS 014353	-33.3	modern	
UJWOFBR1.1	Woi Fana Auger 6, 62-78 cmbs	charcoal	D-AMS 014354	-42.7	102	28
UJWOFBR1.2	Woi Fana Auger 6, 78-86 cmbs	charcoal	D-AMS 014355	-33.1	138	20
Ujir Island Mangrove Core						
UJSNGCR3/96-97	Ujir mangrove core, Walabuim site	sediment	D-AMS 014452	-37.5	3,586	34

Discussion

While results from our October 2015 survey are preliminary or still incomplete, they are encouraging for additional research. Three of the cave sites in Seram have Neolithic age deposits (or older): Liang Fanga, Liang Watu Tewa and Liang Kilbidi. Three open sites in the vicinity of Airnanang village all date to approximately 1000 BP: Bagi, Bukit Kiliotek and Tulak. Hatusua cave in NE Seram returned dates of 500-1000 BP, but it is likely that this cave site has older deposits in deeper layers.

The Ujir archaeological sites all had fairly recent dates (100 BP to modern). These indicate some disturbance at the sites, as they were found in context with older trade ware fragments. Given the limited testing, it is likely that older deposits are present at Ujir.

We attempted to date an oyster shell from the upper part of a wave cut notch about 1m above the current median high tide, but the date of 15,000 BP suggests we did not collect a relevant sample or that the sample was contaminated (expected date would have been about 5,000 BP).

The dates from the mangrove cores returned encouraging results. The deepest Seram core returned a date of about 1200 BP, and the Ujir core returned an impressive 3500 BP date. These all suggest that we can get paleoclimate information from archaeologically relevant time periods.

Future work

Much of the data we collected during the October 2015 survey are still being processed. Two lab analyses are not yet complete: luminescence dating of pottery samples from several sites to further refine site dates, and LA-ICP-MS analysis of clay and pottery to help reconstruct trade networks. For the latter, a sample of 74 earthenware pottery sherds recovered from the Bagi and Hatusua sites in Seram and the Woi Fana and Maisei Fana,sites in Ujir, Aru were described, prepared, and submitted to the Elemental Analysis Facility at the Field Museum, Chicago for analysis. Laser ablation inductively coupled plasma mass spectrometry (LA-ICP-MS) will be used to measure the concentrations of major, minor, and trace elements in the clay paste of these sherds. A total of 20 non-archaeological clay briquette samples from Maluku sources in east Seram, Ambon, Aru, Banda Besar, Pulau Ay, and Pulau Hatta were submitted for the same analysis. When results are received we will use statistical methods to identify distinct source groups among the archaeological samples and compare their compositional signatures with those of the clay samples. This analysis will help us understand ceramic production and exchange in Maluku.

Additional analyses of the mangrove sediment cores is pending grant funding, but will include more complete dating to create age models of the cores, followed by lipid profile analyses to reconstruct paleo salinity and rainfall.

We have submitted a proposal to the US National Science Foundation for additional fieldwork and lab analyses. If we are successful, we plan to return to Seram and nearby islands to do extensive excavation and analyses of at least two of the most promising sites identified in this initial survey season, and possibly do additional survey work.

Summary

While still in the preliminary stages, our project to investigate the processes by which people changed to a Neolithic lifestyle in Maluku Indonesia shows promise. We hope that in the next few years, we will have a more complete understanding about why and how these changes happened at a detailed and local level. This local, ground-up understanding should be useful in evaluating large-scale theories about the ISEA Neolithic, which, after all, was a result of countless individual choices made by people 3-4000 years ago.

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