The Future of Spatial Analysis in Anthropology

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Acknowledgements

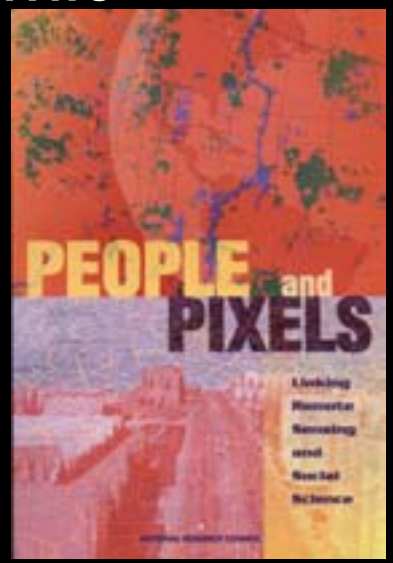
- Thanks to Mark Aldenderfer, Phil Walker, and Barbara Walker for providing slides of their work which were used in this presentation.

The Future of Spatial Analysis in Anthropology

- Spatial analysis and the social sciences.
- Spatial approaches in anthropology.
- Sub-disciplinary differences.
- The state of the art in various sub-disciplines.
- Other examples.
- Conclusions > Gaps.
- Future directions.
- Sources for training and information.
- Challenges and goals

1. Spatial Analysis and the Social Sciences (CSISS and NCGIA)

- Environmental and climate change.
- Urban studies.
- Social and economic inequality.
- Local through global social and economic networks.
- Health and disease.
- Cultural and symbolic meaning of space.



2. Spatial Approaches in Anthropology:
(Web of Science 1971 -2000)

- Search terms:
  - "spatial analysis" and "GIS"
- 39 hits:
  - *American Antiquity = 21*
  - *American Journal of Physical Anthropology* = 3
  - *Human Organization* = 1
  - *Current Anthropology =* 1
  - *American Anthropologist* = 2
  - *American Ethnologist* = 0
  - *Medical Anthropology Quarterly* = 0
  - *Human Ecology =* 11 (7 in one issue)

3. Sub-disciplinary Differences:
(Digital Dissertations 1981- 2000)

- Key words:
  - "spatial analysis" and/or "GIS"
- 119 hits:
  - "Cultural Anthropology" = 32
  - "Physical Anthropology" = 2
  - "Archeology" = 89

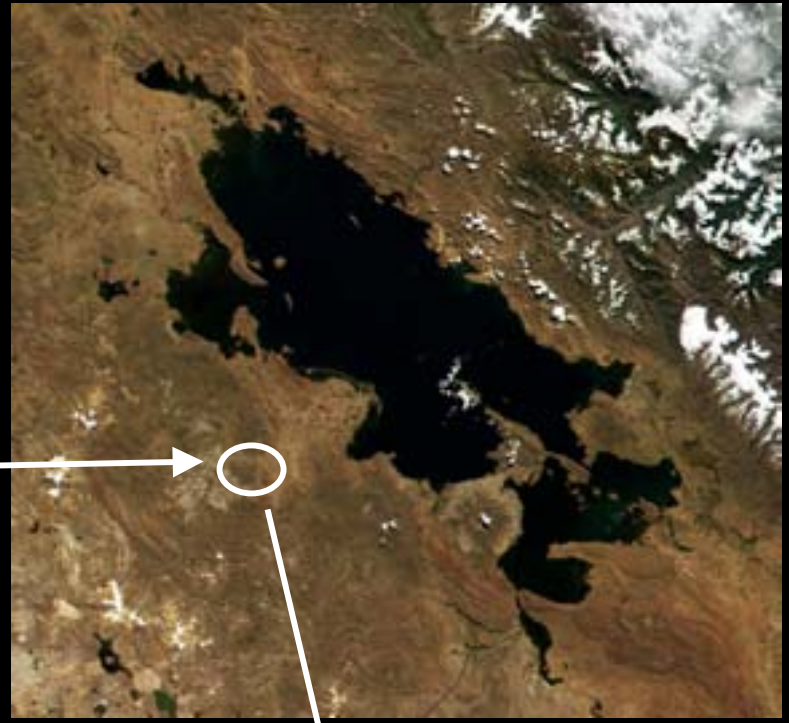
4. The State of the Art

- Archeology
  - Jiskairumoko Project (Aldenderfer and Craig)
- Physical / Medical Anthropology
  - History of Health Project (Steckel, Rose, Larsen, and Walker)
- Sociocultural Anthropology
  - International Cultural Atlas Initiative (ECAI)
  - Center for the Support of Native Lands
  - Mapping Moorea's Lagoon: Marine Protected Areas and the Politics of Place in French Polynesia (Walker)
- Other Interdisciplinary Efforts
  - Public Participation GIS (PPGIS)
  - Participatory 3-D Modeling (P3-DM)

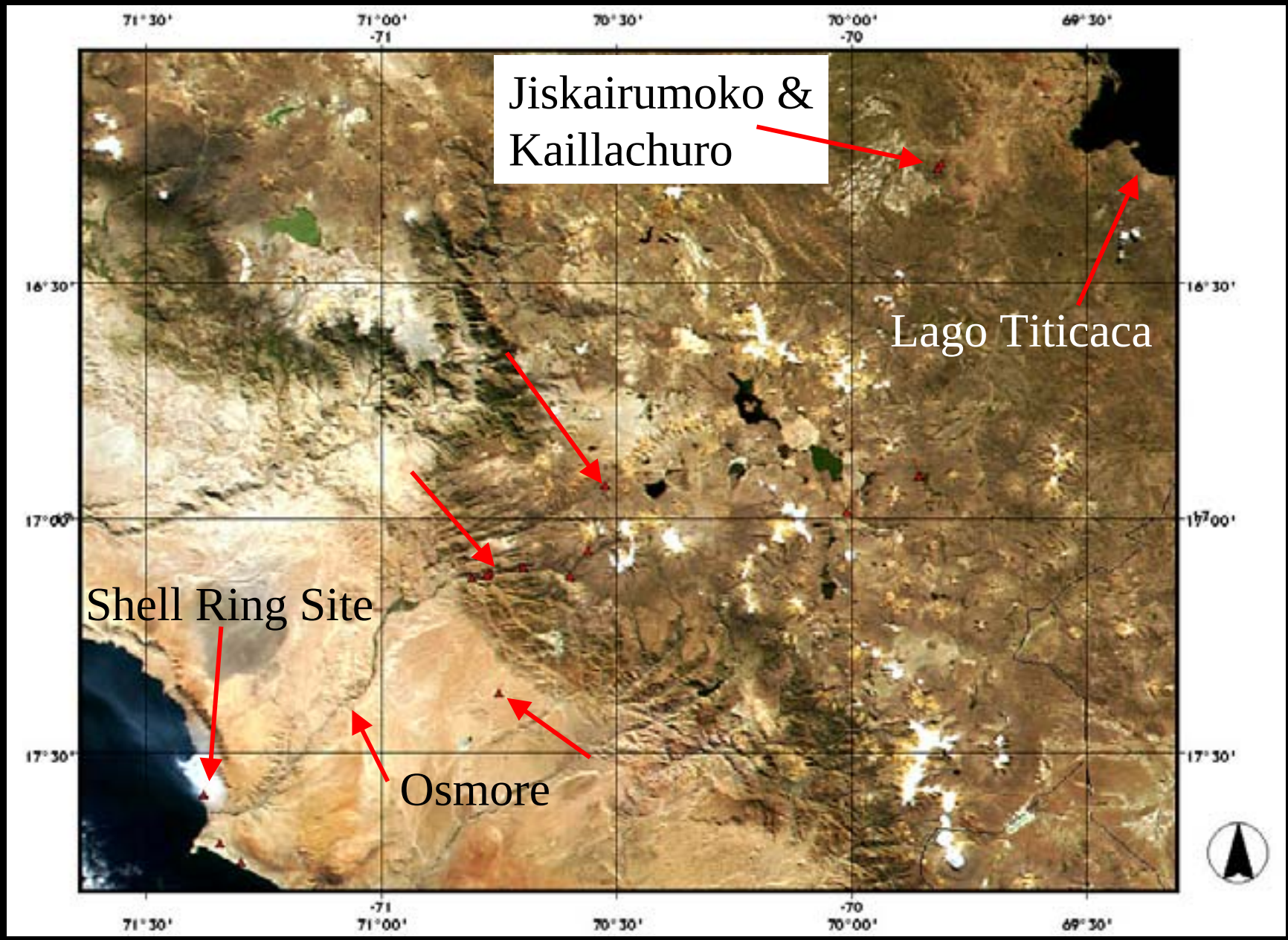
Archeology: The Jiskairumoko Project Peru

- Investigators: Mark Aldenderfer and Nathan Craig, Department of Anthropology, UCSB.
- URL http://titcaca/ucsb.edu
- Working from real-time data collection models in geography, Professor Mark Aldenderfer and graduate student Nathan Craig developed a project that proposed collecting GIS data from excavation at the site of Jiskairumoko directly in the field with no intervening paper to digital data transformation. Their aim is to place data directly into the analytical context, reducing data entry time, and eliminating transcription errors that occur in the paper to digital transformation.

Project Location

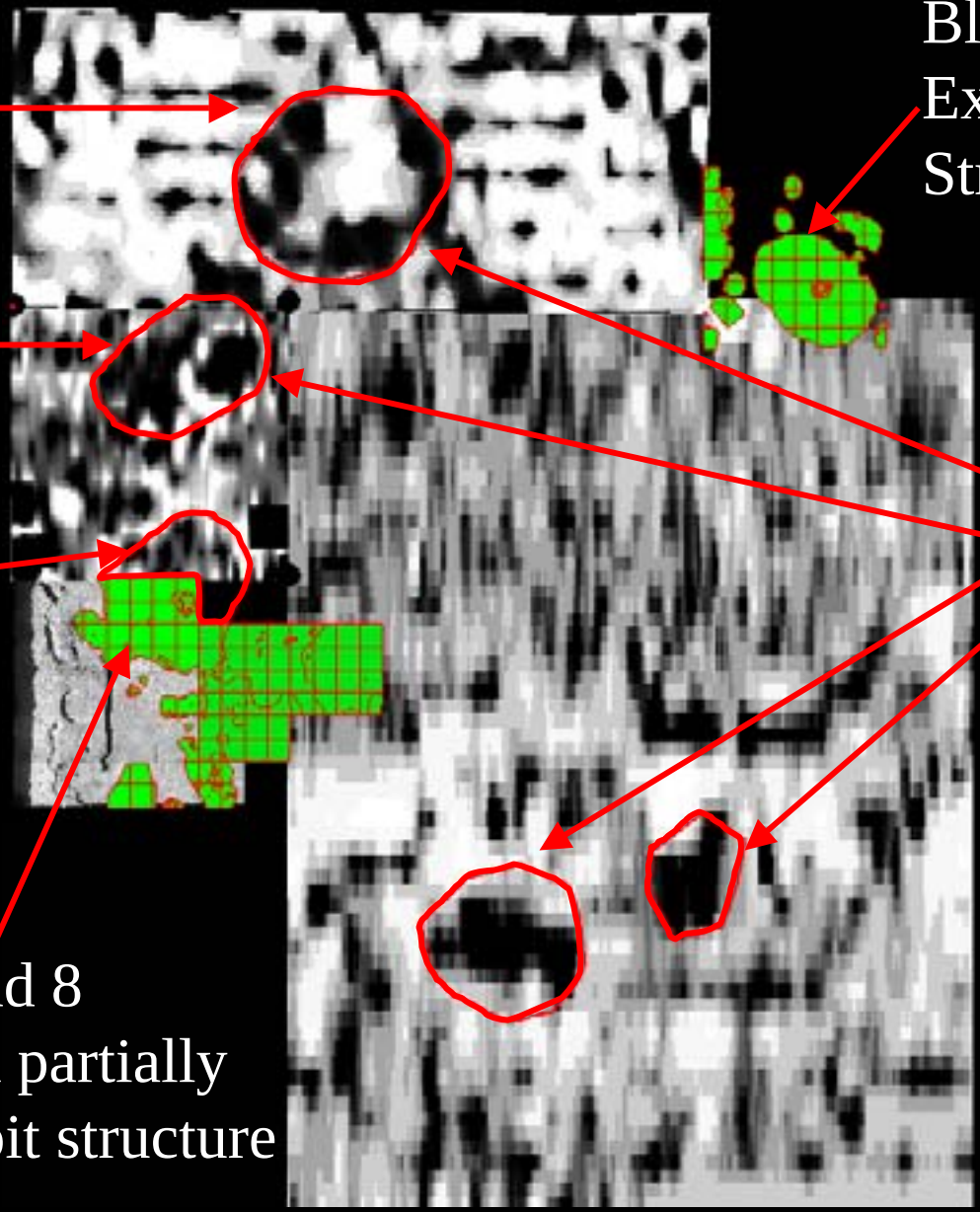


Osmore Drainage Archaic Sites



Ground penetrating radar survey at Jiskairumoko

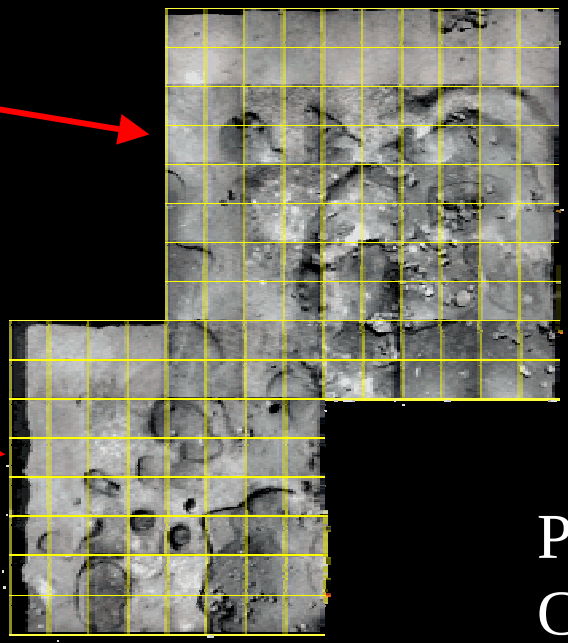
GPR Survey Time Slices and Pit Structures



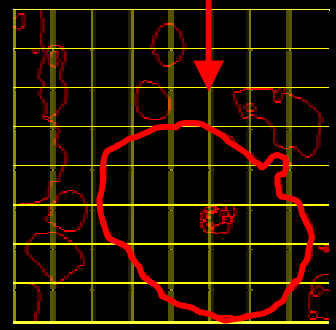
Pit Features Encountered 2001

Block 9

Block 11



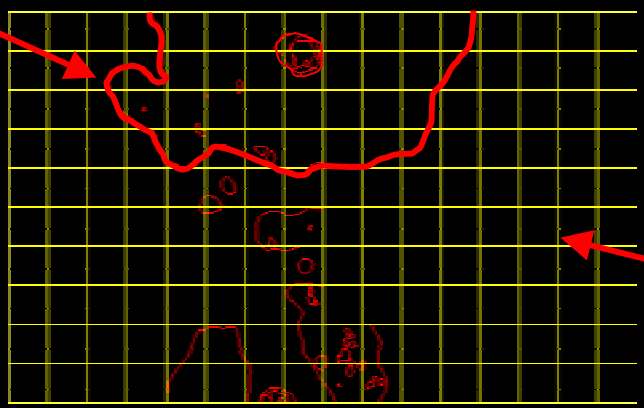
Pit Structure



Block 3

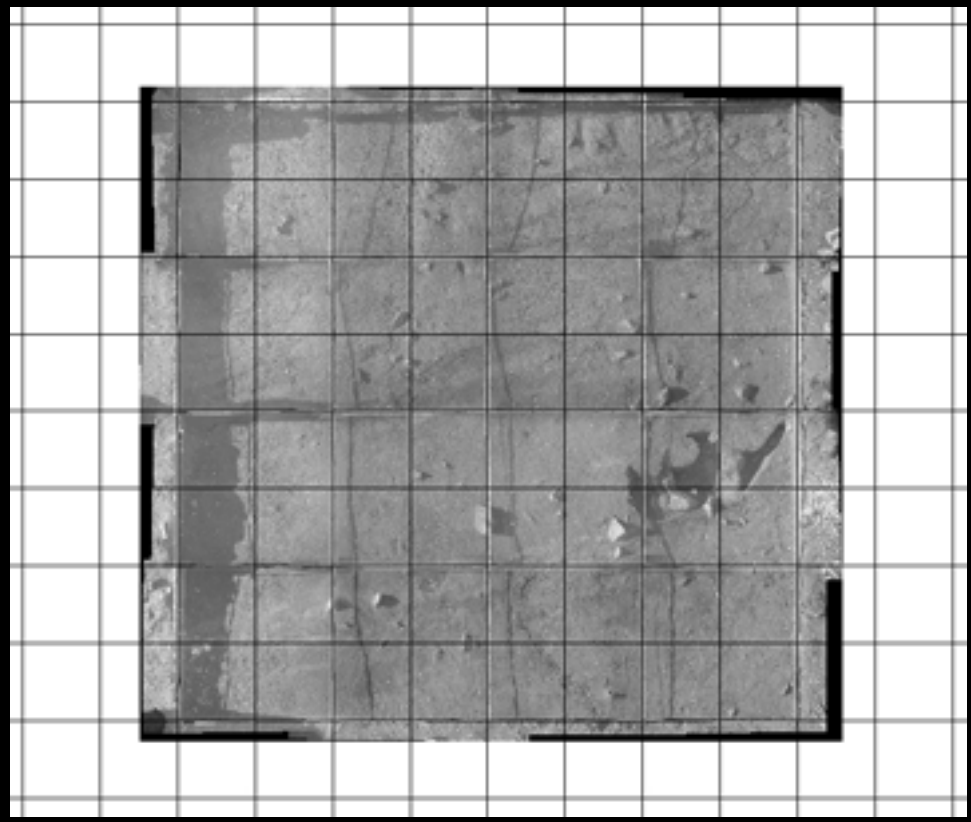
Pit Features Corresponding To GPR Anomalies

Partially Excavated Pit Structrure



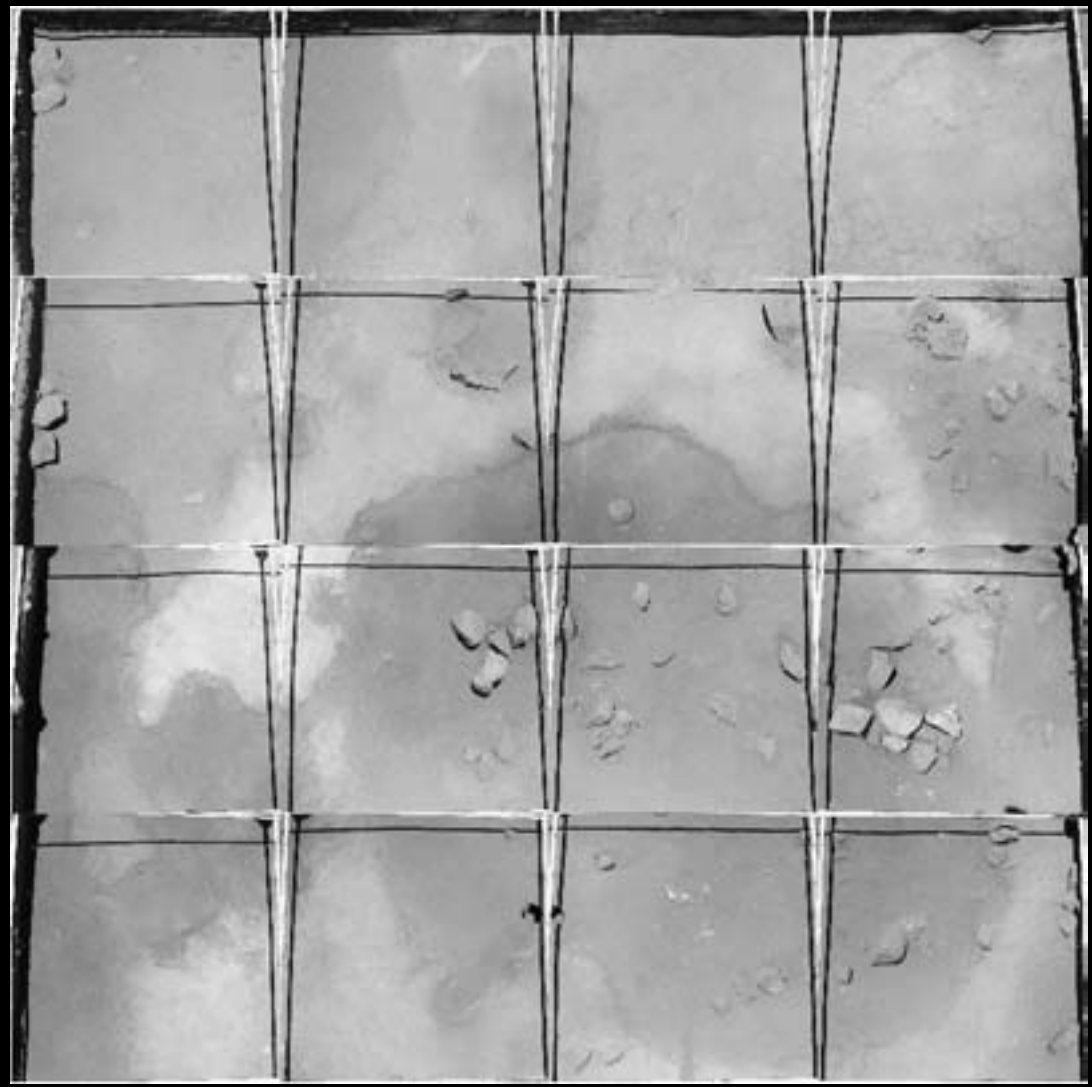
Blocks 1 and 8

ArchSat: CoolPix Digital Camera



Digital Photograph
Georeferenced to Site Grid

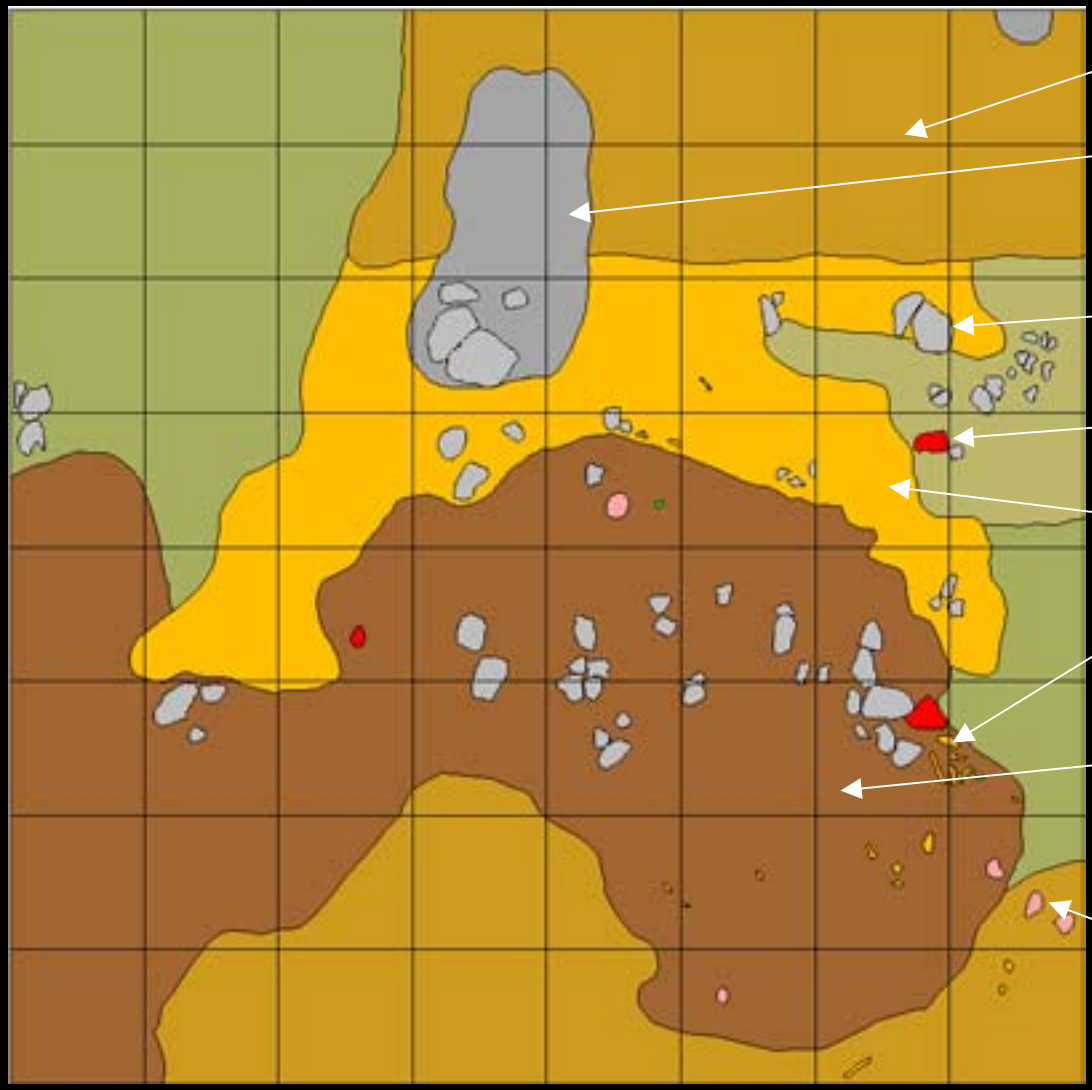
Block 3 Level VII: Photographs



Block 3 Level VII: Features

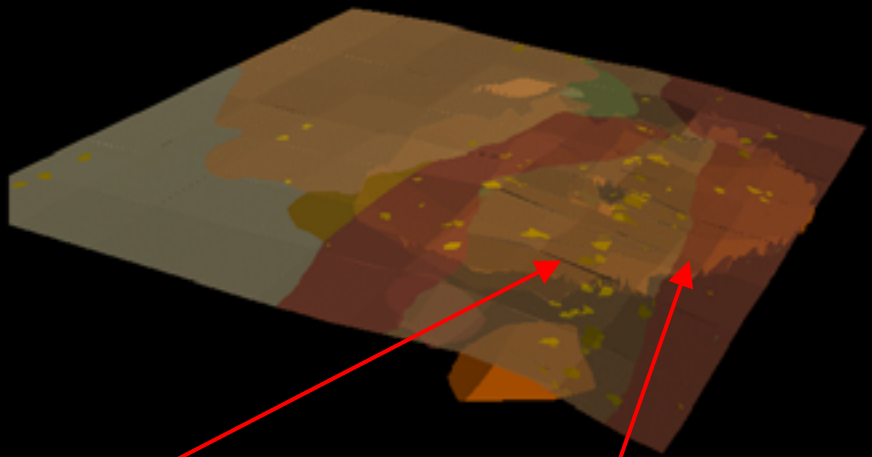
1 meter

Symbol	Value
	Bone
	Burned floor
	Burned rock concent
	Groundstone
	Groundstone frag
	House floor
	Lithic
	Matrix
	Midden
	Mono
	Possible housefloor
	Possible mono
	Rock



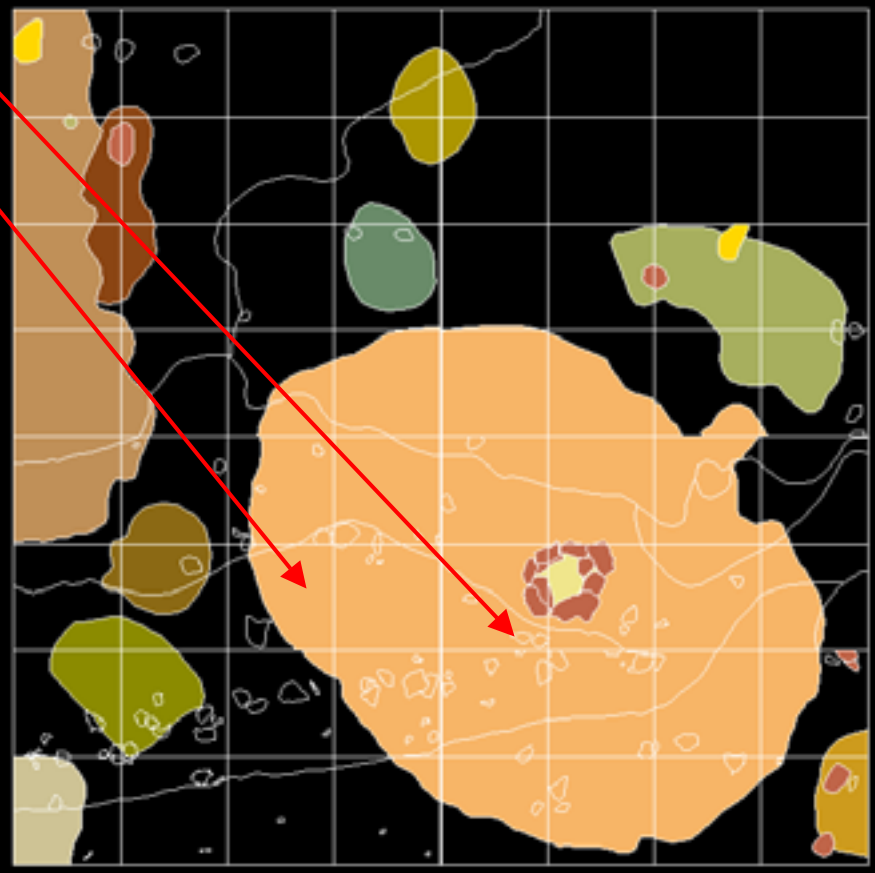
Block 3
Level ii Formative Wall
Level ix Archaic Housepit

Level II shown with white lines
Level IX shown with solid fill

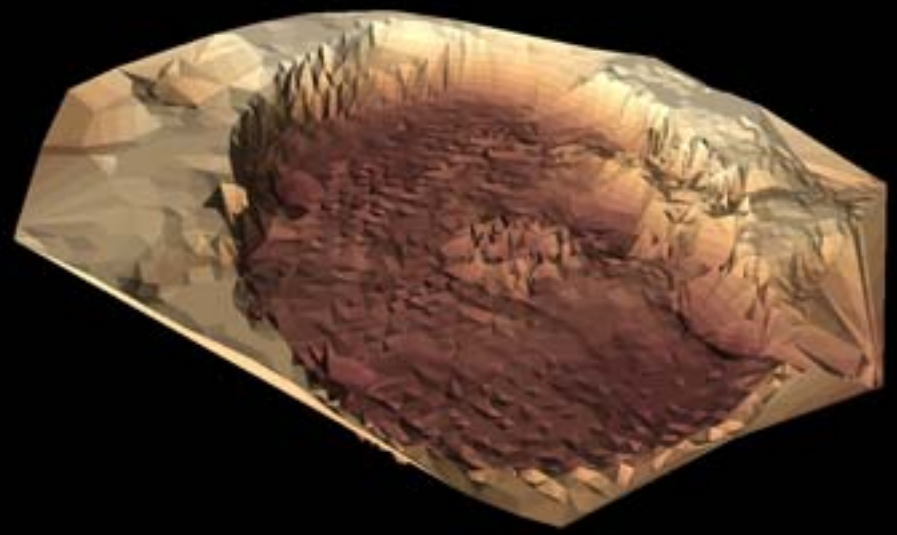


Level II Wall

Level IX Housepit



Digital Recording at Jiskairumoko

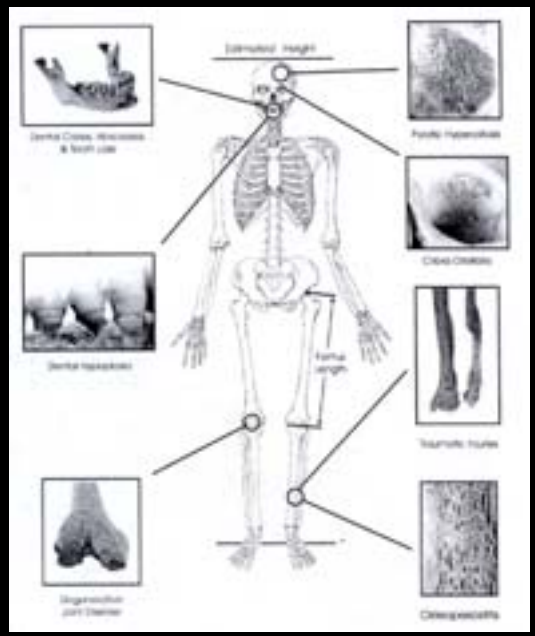


Physical / Medical Anthropology / Bioarcheology: History of Health in the Western Hemisphere Project

- Investigators: Richard Steckel (Ohio State), Jerome Rose (U of Arkansas), Clark Spencer Larsen (Ohio State), Phil Walker (UCSB), and others.
- URL http://www.anth.ucsb.edu/faculty/walker/walker.html

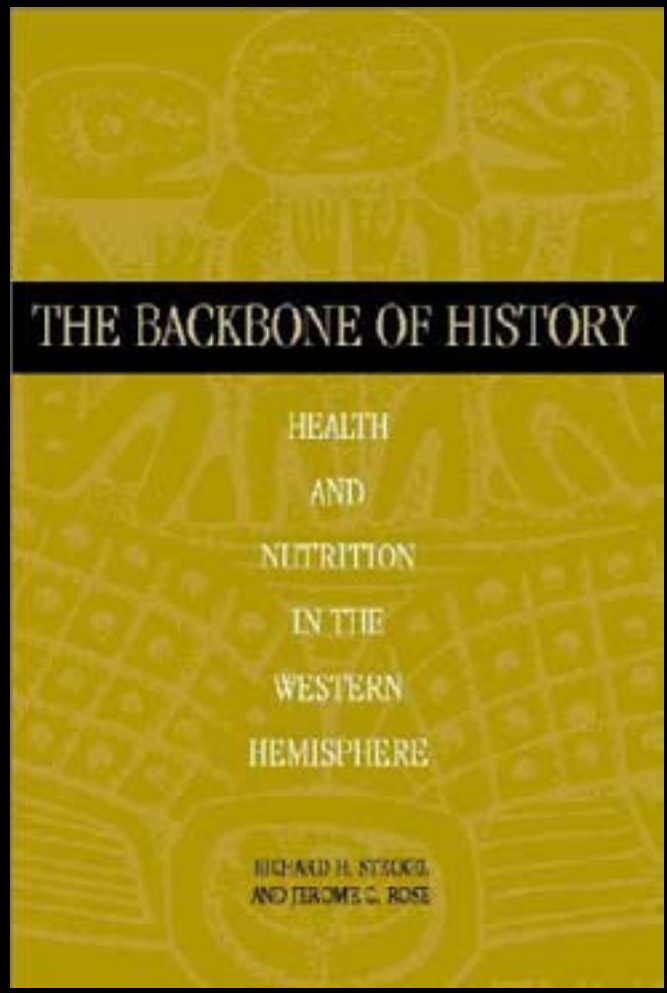
A Geographic Information System analysis of variation in health and nutrition in the Western Hemisphere

A study in which GIS data are used to analyze the environmental correlates of variation in the the health status of people living in the Western Hemisphere from Paleolithic times until the present.



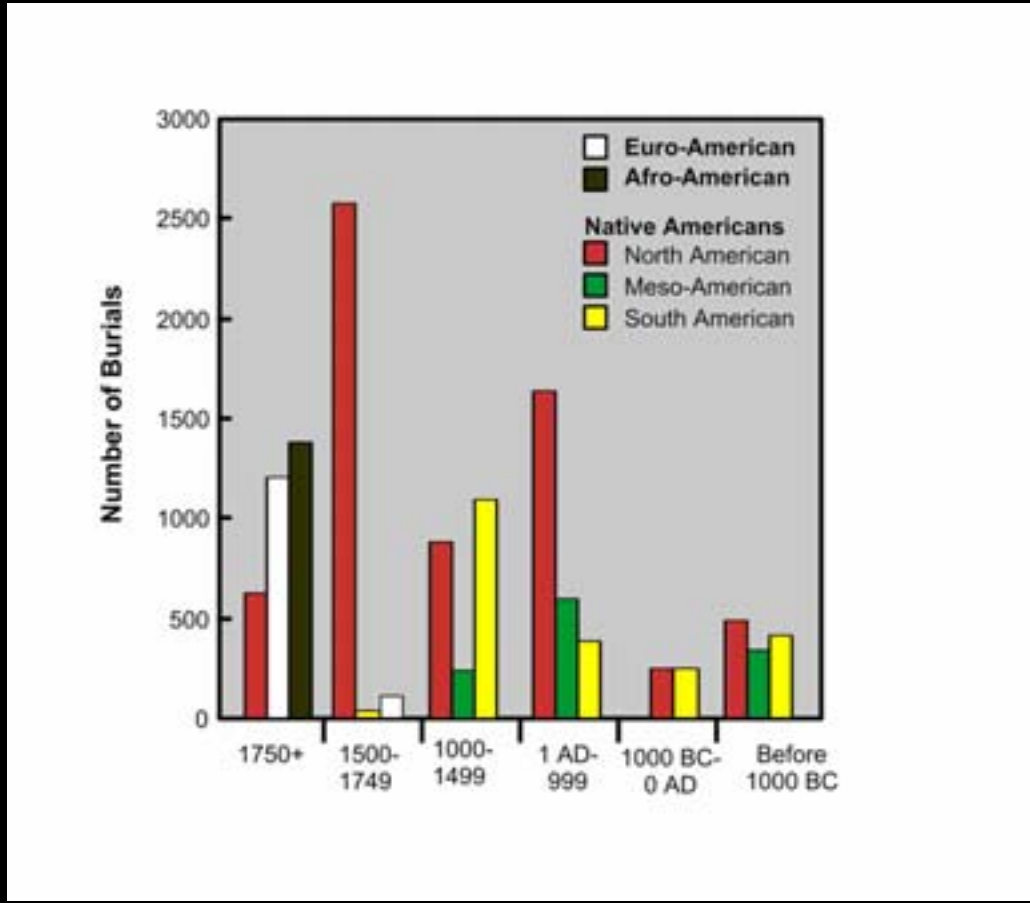
The History of Health Project

- The Health and Nutrition in the Western Hemisphere database provides a unique opportunity to explore the social, economic, and environmental determinants of variation in the health and nutrition of New World populations using GIS



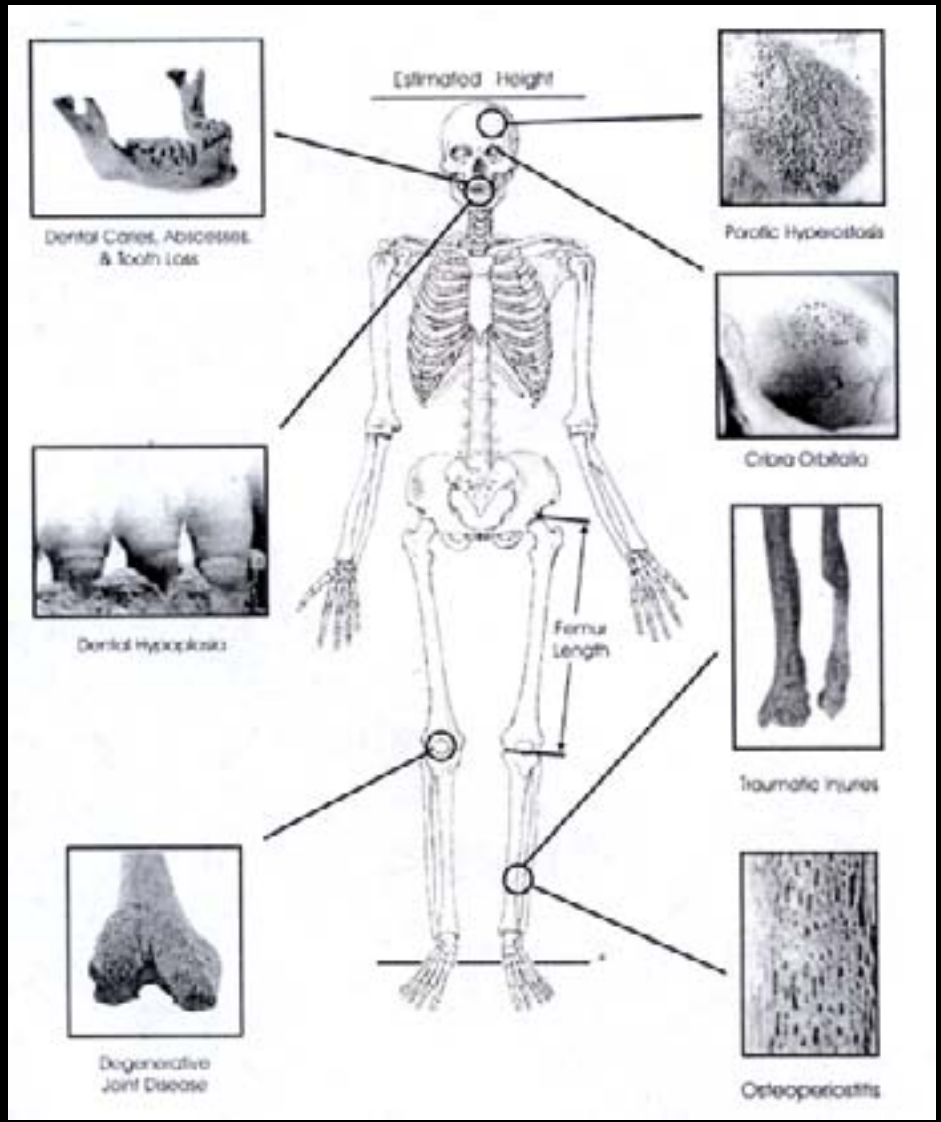
The Western Hemisphere Sample

- This database contains observations of age, sex, skeletal dimensions, and pathological conditions, made on the remains more than 12,500 individuals of Native American (n=9826), Euro-American (n=1304), and African-American (n=1380) ancestry. These people lived at more than 200 sites in North, Central, and South America from ca. 4000 B.C. to the early 20th century.



Skeletal Measures of Health Used in the Western Hemisphere Study

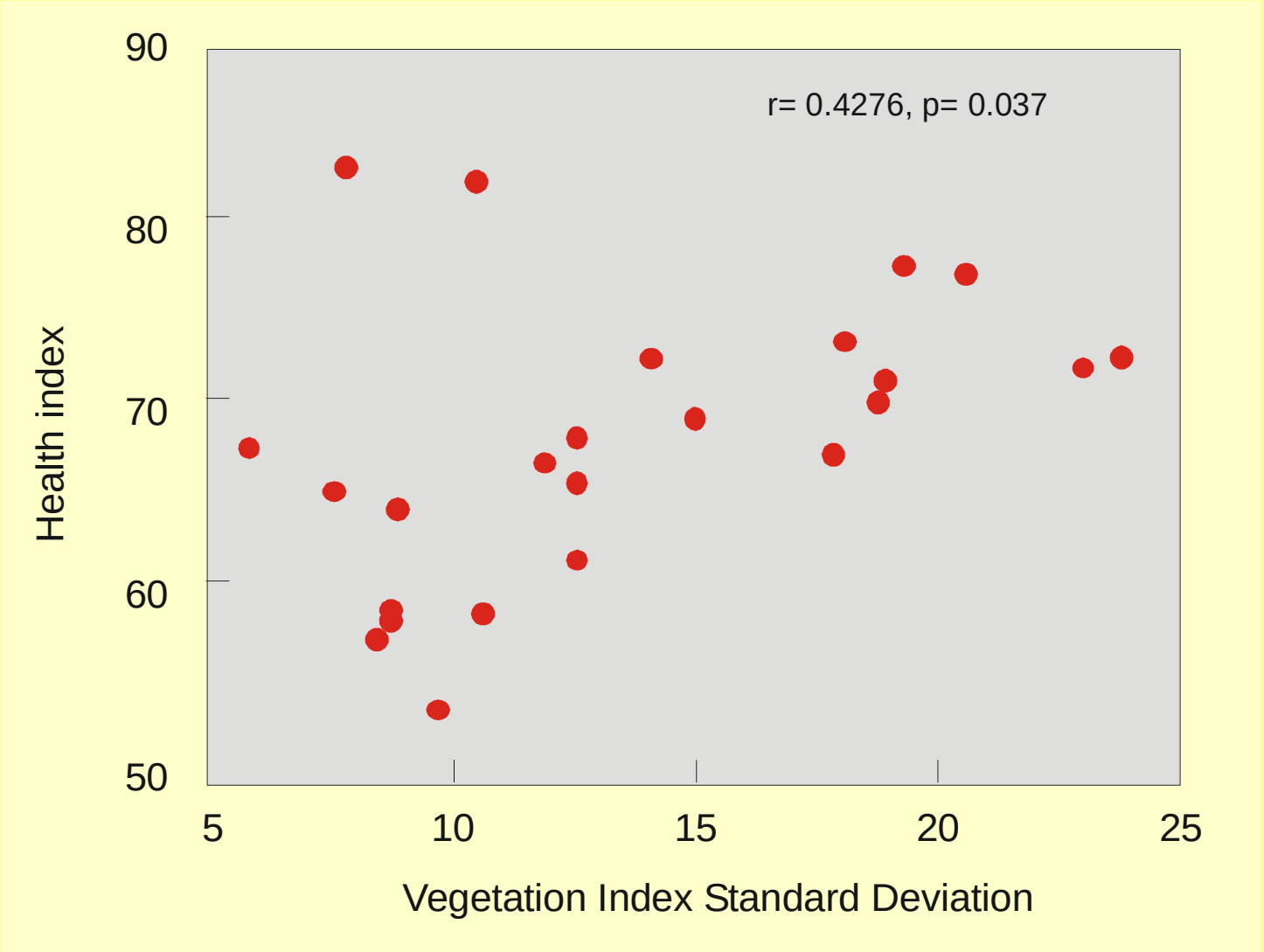
- A variety of skeletal indices of health were analyzed relative to GIS data



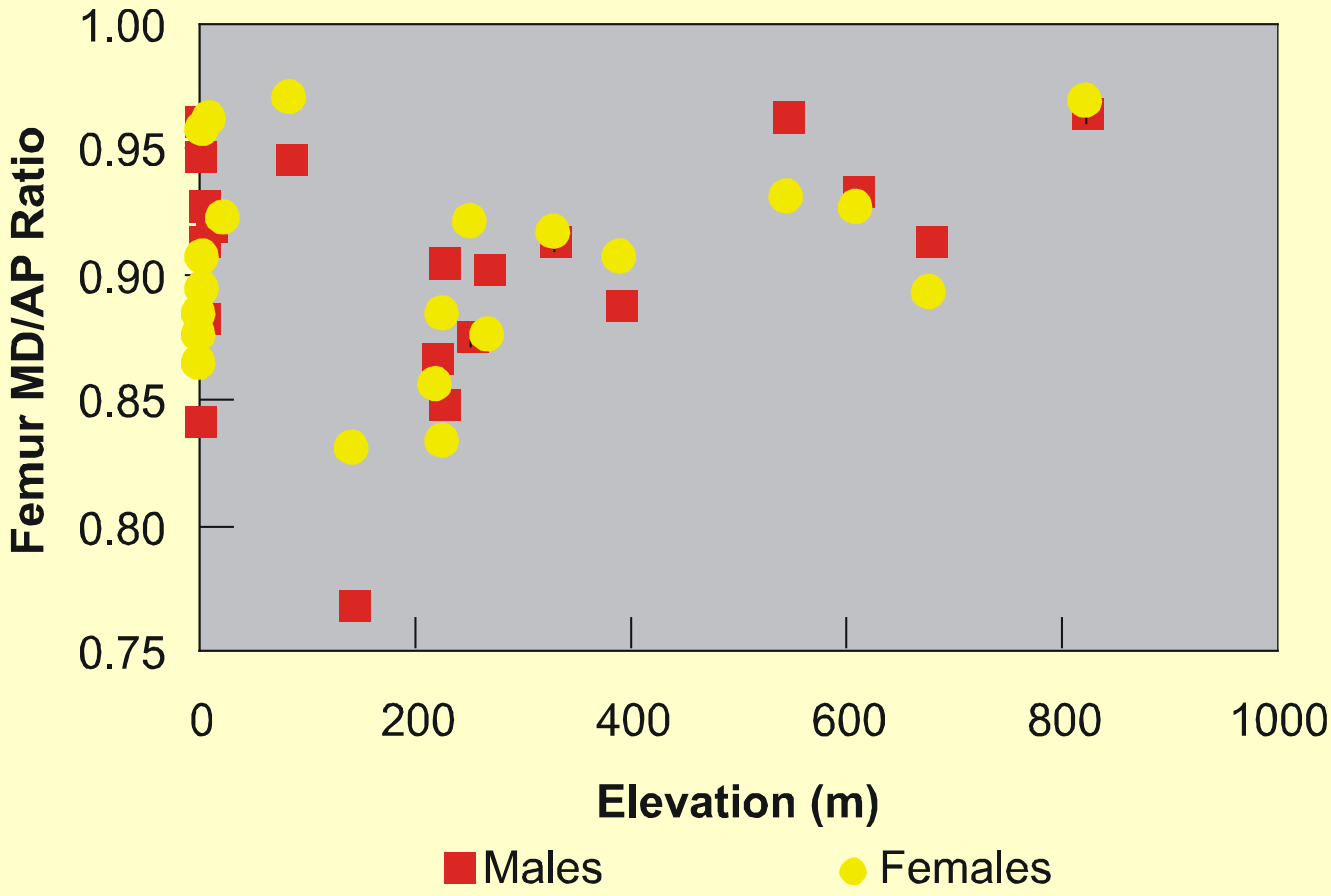
Sites Used in GIS Analysis

- The relationship between health status and local environmental conditions was explored using Geographic Information System databases containing site-specific information on topographical relief, precipitation, and seasonal variation in primary productivity.

Correlation between seasonal variation in primary productivity and health index



Femur Shape Varies with Elevation



Sociocultural Anthropology: (Interdisciplinary Team Work)

- Land Use and Climate Change.
  - See projects in this session
- Electronic Cultural Atlas Initiative.
  - Cultural heritage
- Center for the Support of Native Lands.
  - Ethnocartography
- Public Participation GIS (PPGIS).
- Integrated Approaches to Participatory Development (IAPAD).
- Mapping Moorea's Lagoon: Marine Protected Areas and the Politics of Place in French Polynesia.
  - Political ecology of tourism and MPAs

http://www.ecai.org/

- Housed at UC Berkeley.
- Collaborative, interdisciplinary project.
- Concerned with cultural heritage.
- Integrates global mapping, imagery, and texts.
- Provides scholars and users with a data base based on digital technology.
- Uses distributed institutional resources and encourages interoperability.

THE CENTER FOR THE SUPPORT OF
NATIVE LANDS

Tel: (703) 841-9771 Fax: (703) 841-9774
3240 Wilson Blvd., Room 220
Arlington, VA 22201-4409 USA

Welcome to Nativelands.org

Mission Statement

Native Lands works to protect biological and cultural diversity in Latin America, with a focus on Central America and southern Mexico. We do this by assisting indigenous peoples to develop and carry out their agendas for the preservation of the region's natural and cultural heritage.

- more -

Central America Map Update

In 1992, Native Lands (at the time the Central America Program of Cultural Survival) collaborated with the National Geographic Society to produce The Coexistence of Indigenous Peoples and the Natural Environment in Central America. This thematic map showed the close relationship between indigenous peoples and forests in Central America and highlighted the progressive destruction of the region's natural vegetation over the last fifty years.

- more -

Indigenous Landscapes

Native Lands has written an in depth analysis of participatory mapping projects in Honduras, Panama, and Bolivia and draws lessons from them. Framed as a narrative case study of these three projects, together with insights from additional projects in Cameroon and Suriname, this book constitutes a practical guide to community mapping with indigenous peoples. 152 pp. with 25 figures, plus 3 bound maps. Published October 2001.

- more -

Mapping in Kuna Yala

Since May 2000, Native Lands has been working with the Kuna General Congress, which is the maximum authority of the Kuna people, to map the Kuna homeland, the Comarca of Kuna Yala. The Comarca (Indigenous Reserve), covering an area of more than 5,000 km2 of land and sea in the northeast corner of Panama.

- more -

URACCAN Work Plan

Native Lands is developing a four year work plan in close collaboration with URACCAN, the Universidad de las Regiones Autónomas de la Costa Caribe Nicaragüense. This work plan will include a series of activities within Central America to strengthen the technical capacity of indigenous organizations in the region.

- more -

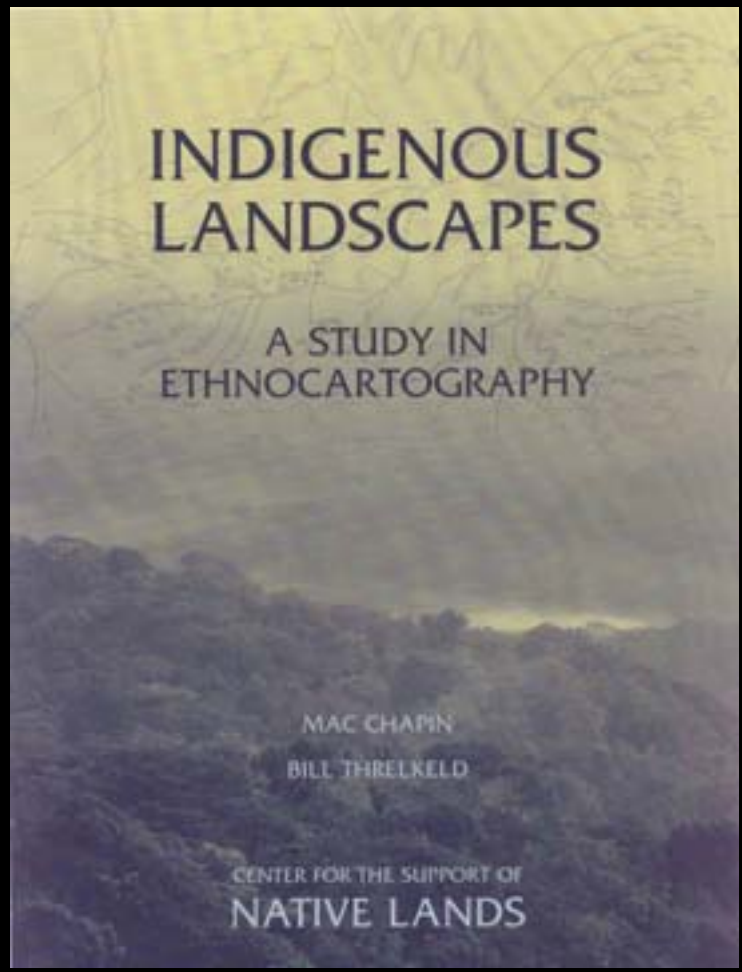
 | En Español

The Center for the Support of Native Lands: Central America Map Update

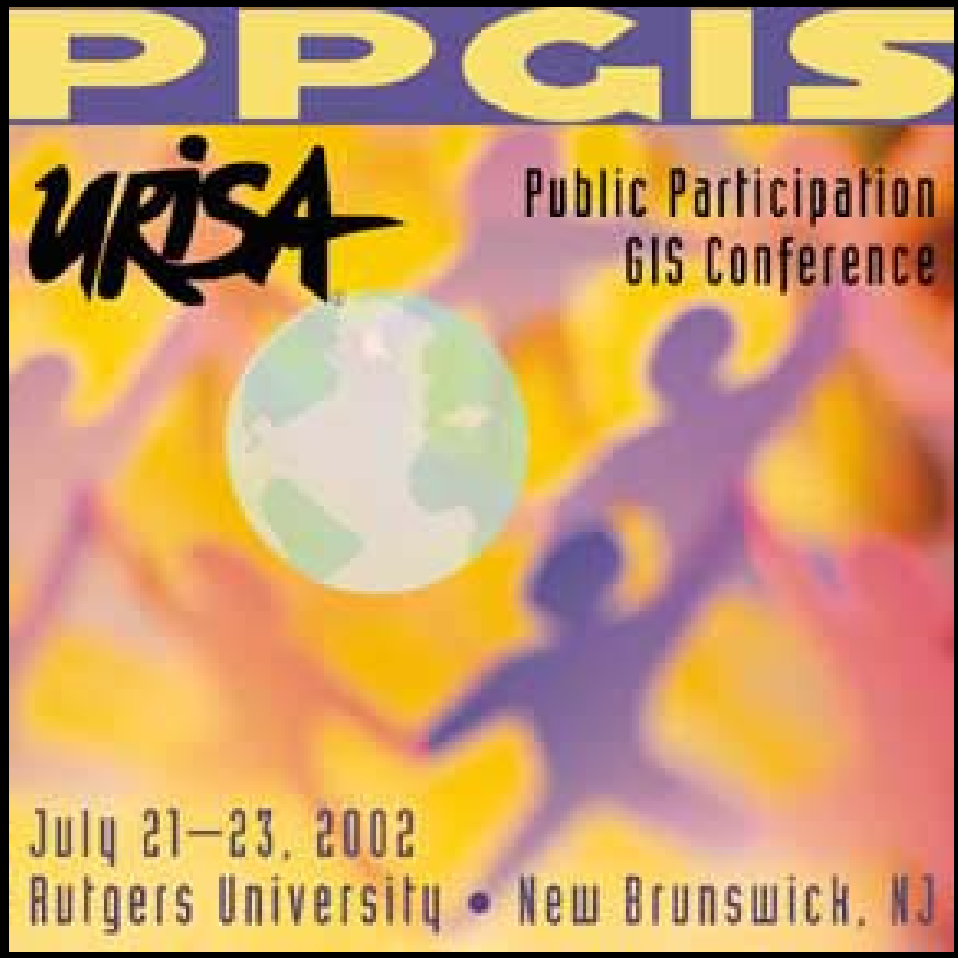
<http://www.nativelands.org

Indigenous Landscapes: A Study in Ethnocartography

- In 2001, Native lands published this detailed case study / manual of the participatory mapping it jointly organized in Honduras, Panama, and Bolivia since 1992.



Public Participation GIS (PPGIS)



URISA Meetings

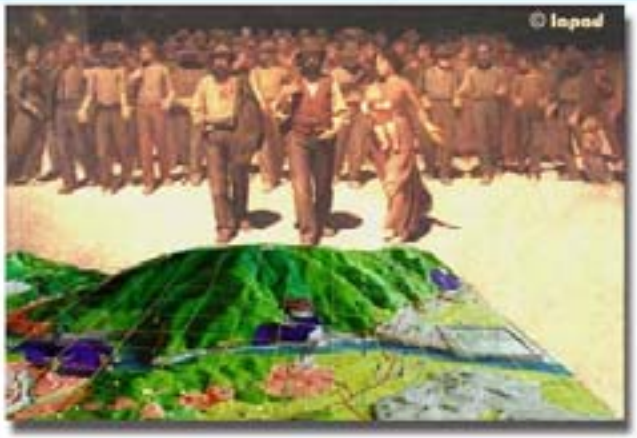
Public Participation GIS (PPGIS)

- PPGIS refers to a range of topics raised by the intersection of community interests and GIS technology.
- Goal to empower citizens and communities.
- In large part a critique of “traditional” GIS.

iapad

Participatory Avenues

Integrated Approaches to Participatory Development (IAPAD)



Participatory Avenues

Participatory Avenues aims at sharing significant progress in visualizing people's spatial knowledge (cognitive maps) and in providing communities added stake in tailoring and owning conservation and development initiatives.
Participatory 3-Dimensional Modeling is promoted as "best practice".

Protected Area Management Go!

Participatory 3-D Modeling Go!

What's New on this web site

- NEW New selected bibliography on PPGIS and P3DM. (Posted on November 7, 2002).
- P3DM Multimedia Resource Kit. Participatory 3-Dimensional Modelling: Guiding Principles and Applications. Coming soon! (Posted on August 21, 2002)
- Tips for Practitioners: Find your answers to many practical questions on community-based mapping (Updated on July 6, 2002)
- P3DM for Conflict Resolution and Management (Posted on May 3, 2002)
- Reference documents and links supporting People's Participation in NRM including Indigenous Peoples' Intellectual Property Rights. (Posted on April 21, 2002)
- Spatial learning and the vertical dimension. (Posted on March 31, 2002)
- Participatory 3-D Modeling database. (Posted on March 1, 2002)

More on What's New ....

We support: Integrated conservation and development interventions founded on *genuine* people's participation

Vision, **Mission** and **Goals**

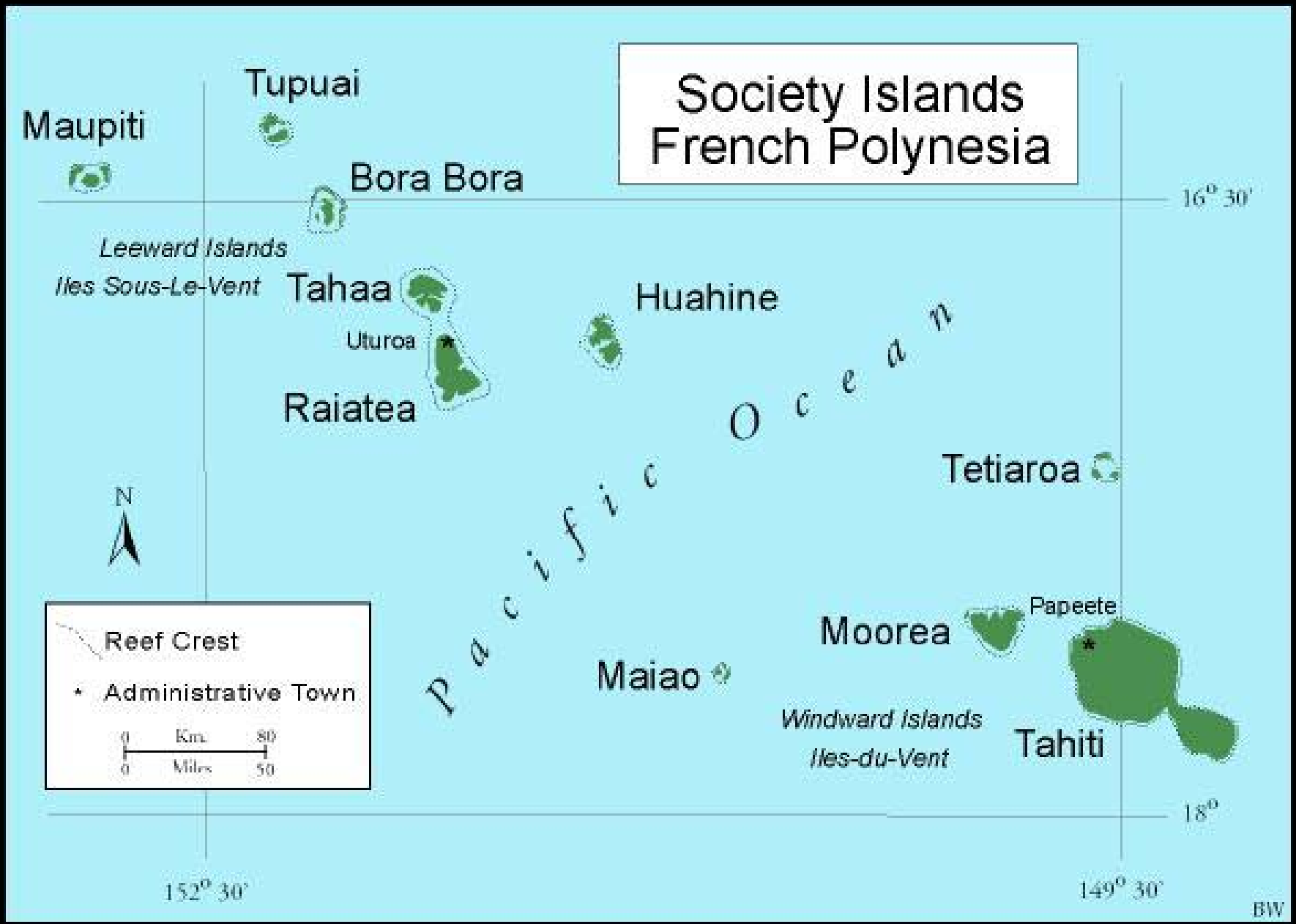
IAPAD: Mission, Vision, Goals

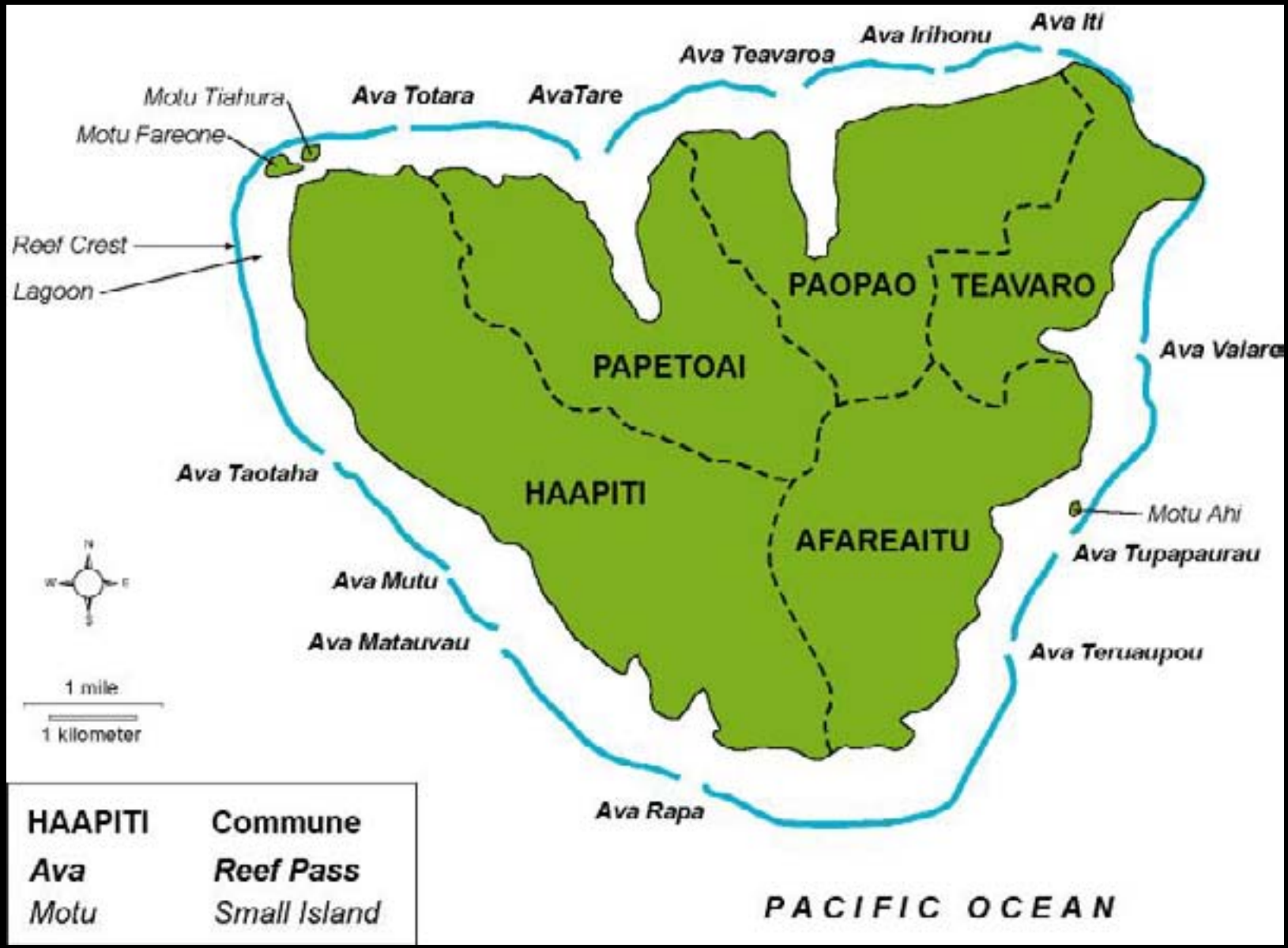
- Vision
  - Integrated conservation and development interventions focused on *genuine* people's participation.
- Mission
  - Dedicated to assuring grassroots' participation in the project cycle (design, appraisal, implementation, monitoring and evaluation).
  - Committed to facilitating the interaction of less favored groups of society with local government, institutional, and donor agencies.
- Goals
  - Promote the diffusion of Participatory 3-D Modeling (P3-DM) and PPGIS as best practice for merging people's knowledge and traditional spatial information.
  - To become an international meeting point for practitioners in community mapping and PPGIS.

IAPAD: Participatory Mapping

The Political Ecology of Tourism and MPAs: Mapping Moorea's Lagoons

- P. Investigator: Dr. Barbara Walker, UCSB.
- Funding: NSF and MacArthur Foundation.
- Interdisciplinary and collaborative.
- Project involves studying the process and effects of establishing a system of marine protected areas (MPAs) in Moorea's lagoon. Responding to concerns about overfishing, the government is attempting to preserve one of the principal environments that tourists expect to experience in French Polynesia: the abundant underwater world of the tropical coral reef ecosystem.
- URL: http://isber.ucsb.edu/~blwalker/french_poly_research.htm


Society Islands
French Polynesia
Tupuai
Maupiti
Bora Bora
16° 30'
Leeward Islands
Iles Sous-Le-Vent
Tahaa
Huahine
Uturoa
Raiatea
Pacific Ocean
Tetiaroa
N
Papeete
Moorea
Maiao
Windward Islands
Iles-du-Vent
Tahiti
Reef Crest
Administrative Town
0 Km. 80
0 Miles 50
18°
152° 30'
149° 30'
BW

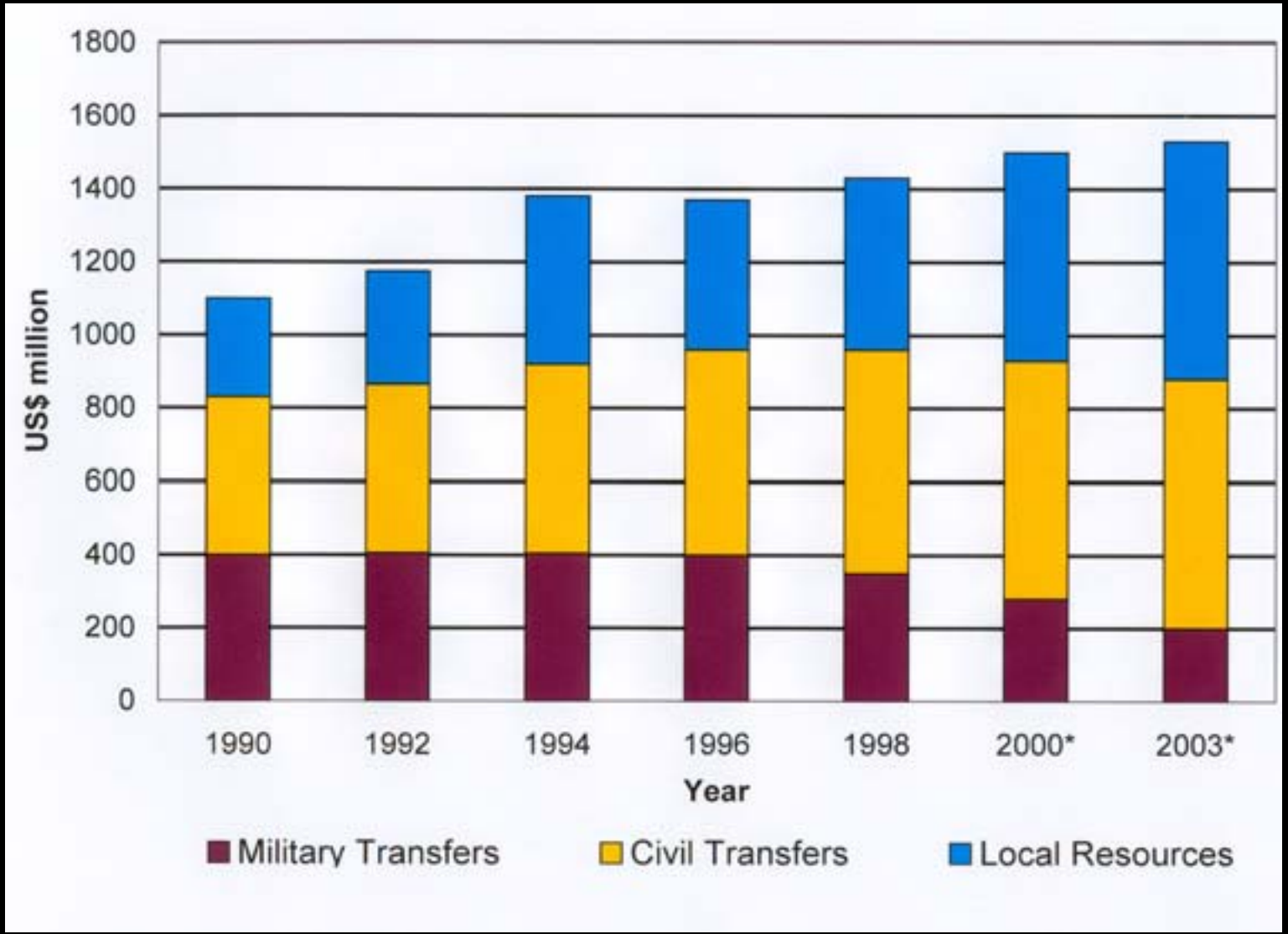


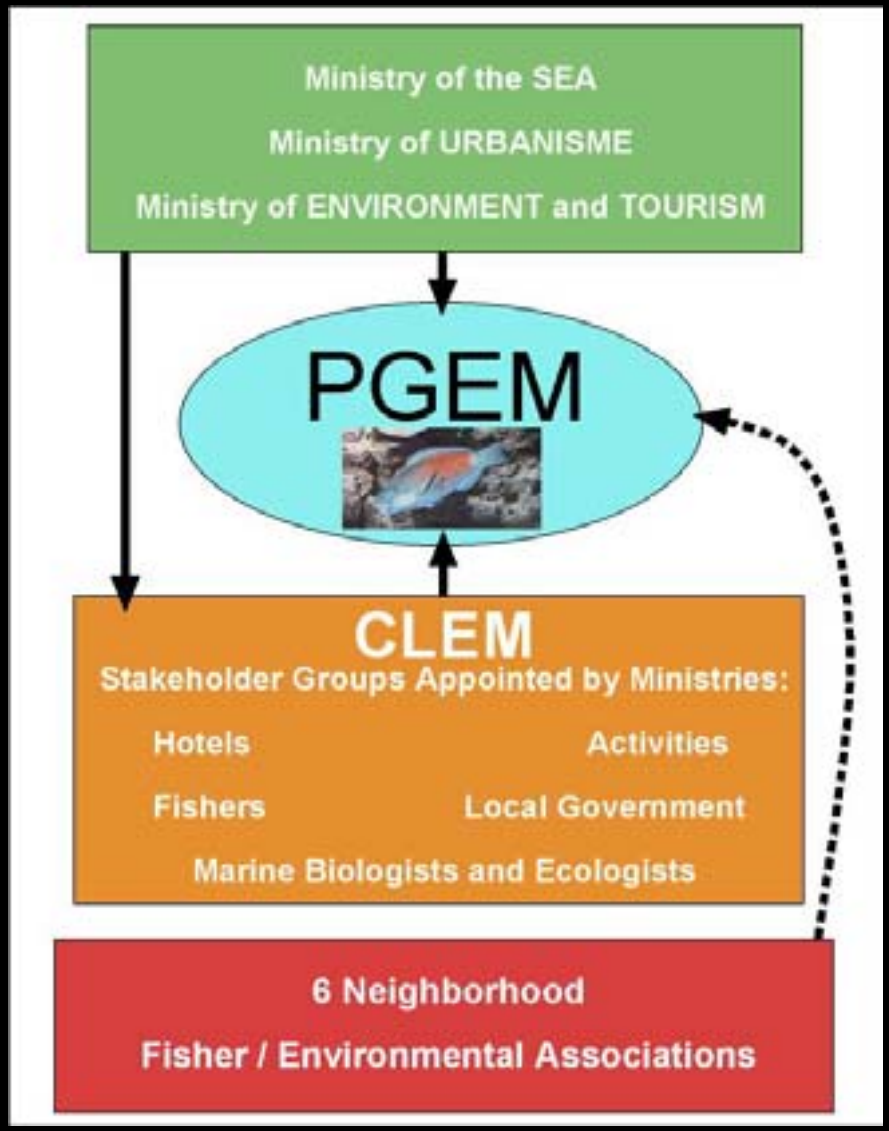
Map of Moorea

Project Summary

- Addresses the cultural, economic, and ecological efficacy of the MPAs.
- Examines how economic development, human population increase, and changes in consumption patterns affects the use, conservation and degradation of lagoons.
- 4 types of data: socioeconomic, ecological, geo-spatial, and historical.
- Facilitates the creation of a community-based GIS, in which all lagoon users will have the opportunity to create, up-date, disseminate, and acquire knowledge about the lagoon in a spatial context.

Le Pacte de Progres

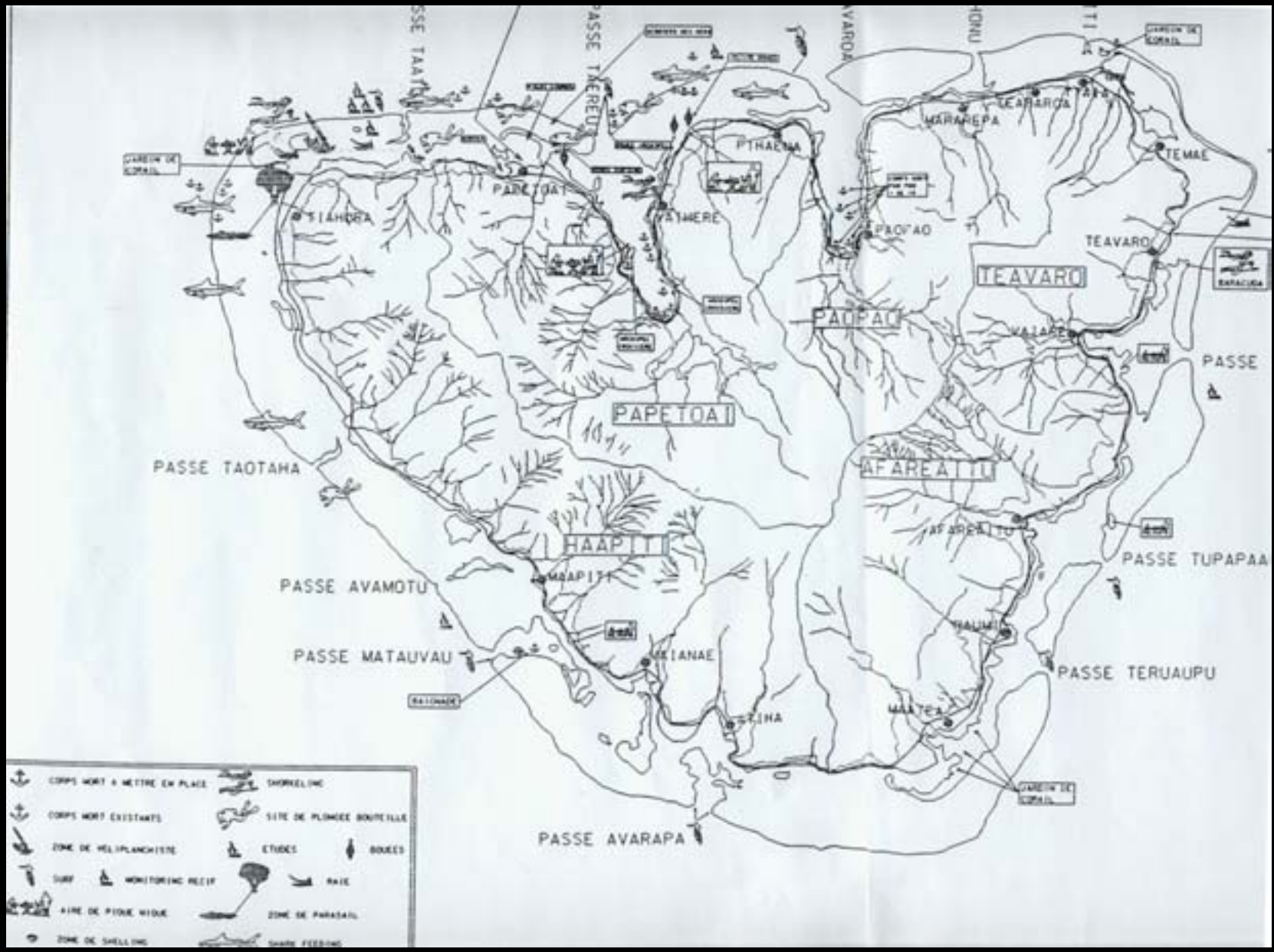




Plan de Gestion de l'Espace Maritime – PGEM
(Marine Space Management Plan – PGEM) Framework

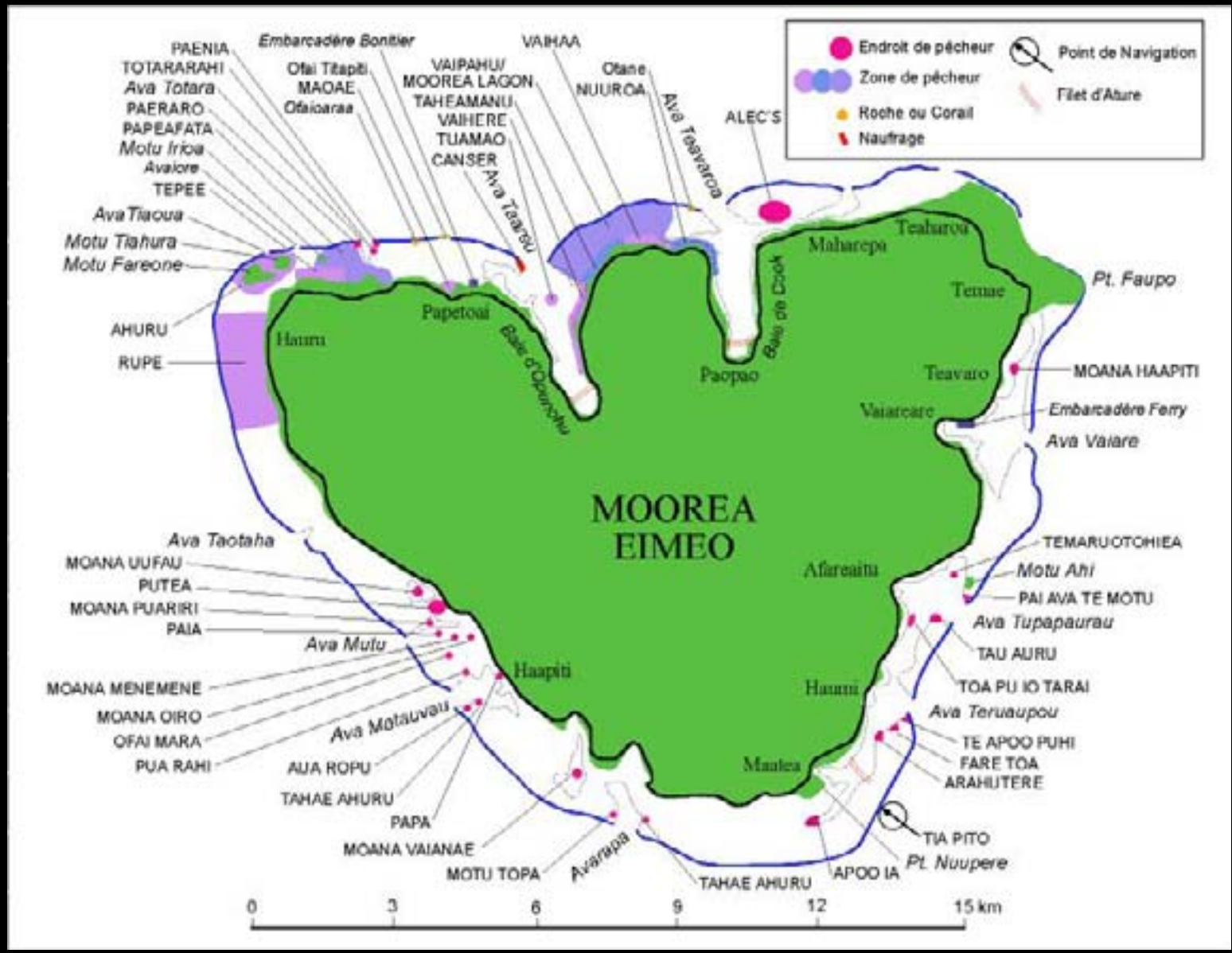
Data Layers in PGEM GIS

- Lagoon activities.
- Hotel and adjacent swimming areas.
- Fishing spots.
- Permanent features of the lagoon.



Early PGEM Map

Close-up of New PGEM Map



Fishers' Map Using PPGIS

DOUZE ZONES DE RÉSERVES POTENTIELLES À MOOREA

Après les propositions faites par René Galzin pour la création de zones de réserves dans le lagon de Moorea, Edmond Tuaho, président de l'association des pêcheurs Vaipua, a proposé d'effectuer une tournée lagonaire pour délimiter les zones de reproduction. Cette sortie s'est faite mardi matin, avec le concours de René Galzin, chercheur au Criobe, Jean-Pierre Punaa, pêcheur et Bernard Bagliomini, représentant le secteur touristique.

Une expérience de 43 années

Prochaine réunion en octobre

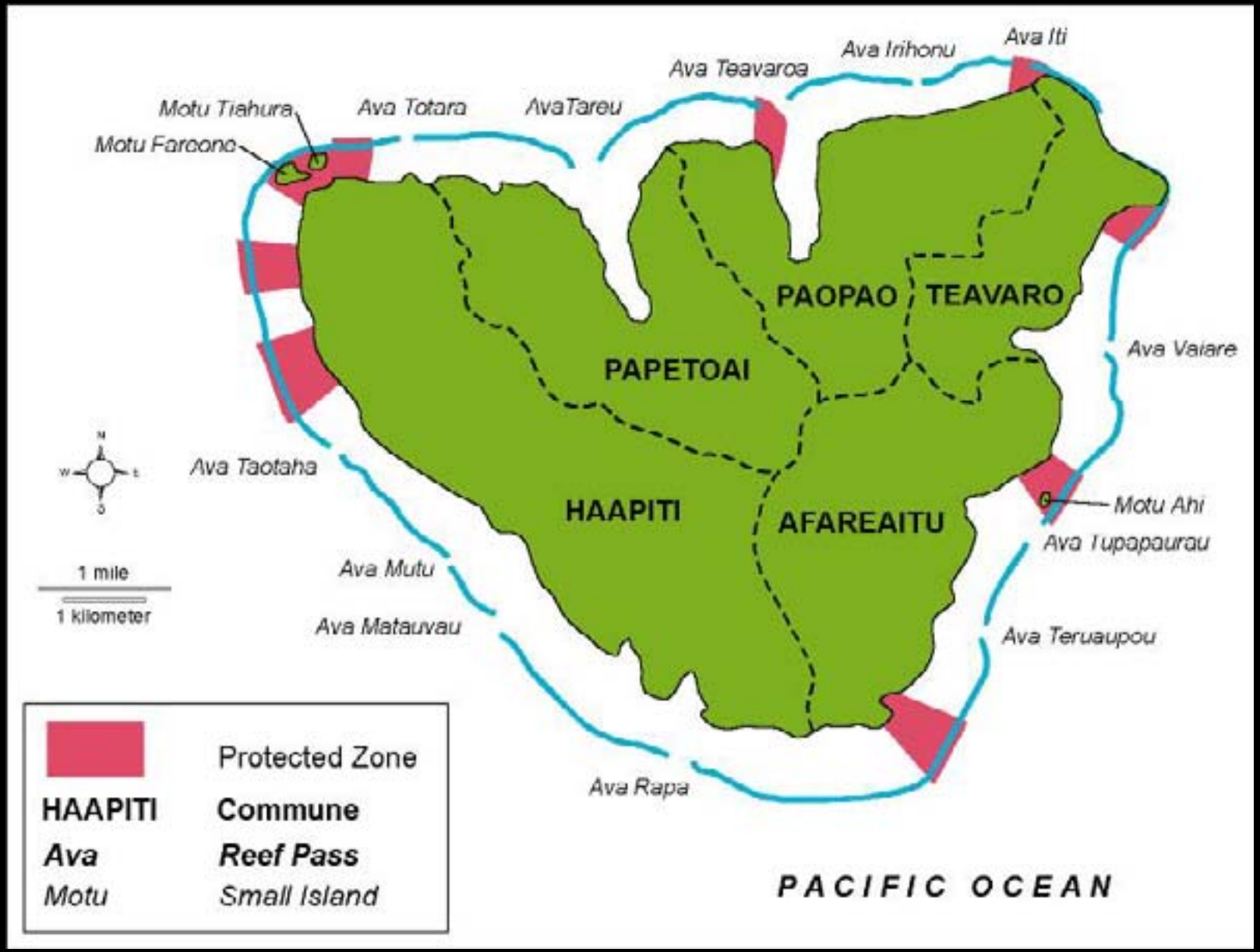
“12 Potential Reserve Zones” (50% no-take)

The Politics of Mapping and GIS

- Access to technology.
- Who constitutes the data.
- Privileging certain forms of knowledge.

Types of Conflict Surrounding the PGEM

- Conflicts over traditional vs. modern forms of lagoon conservation.
- Conflicts over theories of lagoon ecology.
- Conflicts over access to lagoon space and resources.



Latest Version of PGEM Map

5. Conclusions > Gaps

- Most Spatial analysis has been done by archeologists, physical anthropologists, biosocial anthropologists and other more science oriented anthropologists.
- Most work by sociocultural anthropologists has focused on land use and climate change.
- Most work has been done by interdisciplinary teams.
- First uses have been data driven rather than problem or hypothesis driven.
- Most work has been anthropology *in* rather than the anthropology *of* spatial analysis/GIS.

6. Future Directions

- More anthropology *of* spatial approaches (not only of spatial approaches but of IT more generally).
- Expansion of "qualitative" approaches and integration of qualitative data/information: e.g., the distribution of health risks/disease rather than the distribution of the perceptions of health risks.
- Expansion into substantive areas: e.g., globalization (networks of people, institutions, commodities, financial flows, etc.).
- Expansion into ways to visualize/integrate other kinds of cultural information.

7. Sources for Training and Information

- NSF Scholars Awards for Methodological Training for Cultural Anthropologists
  - http://www.nsf.gov/sbe/bcs/anthro
- National Center for Geographic Information and Analysis
  - http://www.ncgia.ucsb.edu
- Center for Spatially Integrated Social Science (CSISS)
  - http://www.csiss.org
- Anthropological Center for Training and Research on Global Environmental Change (ACT)
  - http://www.indiana.edu/~act/home.html
- Center for the Study of Institutions, Population, and Environmental Change (CIPEC)
  - http://www.indiana.edu/~cipec/

8. Challenges and Goals: (CSISS 2002)

- Create a clearinghouse for the tools, case studies, educational opportunities, and other necessary resources.
- Introduce a new generation of scholars to a spatially integrated approach to research.
- Foster collaborative interdisciplinary networks that address core issues in the social sciences.
- To expand applications of newly available spatial reference data and new information technologies.
- Develop new means of outreach.