

## **GEOGRAPHY 8960**

### **Environmental Variability and Human Migration. From Out of Africa to climate refugees in the 21<sup>st</sup> century**

**Days & times:** Tuesdays 14:15 to 17:00 PM

**Room:** DB 1186

**Instructor:** Alvaro Montenegro

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### **Objectives**

The seminar will approach the theme of human migration through the lenses of Geography, taking into consideration the spatial, social and environmental aspects of the process but focusing on the role of environmental variability. We will start with an overview of theories that propose to explain why and how people migrate. This will be followed by a series of case studies where several past migration events will be described and analyzed in the context of the theoretical framework discussed in the first portion of the seminar. Given the seminar's emphasis, a general description of the environmental setting in which the migration took place will accompany each case study. Lastly, we will look into the potential role of anthropogenic global warming as driver of future human migrations.

### **Expected learning outcomes include:**

- a) Basic understanding of theories explaining human migration.
- b) Familiarity with the general aspects of several important large-scale migration events in human history and pre-history.
- c) The ability to relate theory to observations in the context of the migratory events analyzed.
- d) Understanding of the main processes controlling environmental variability at the temporal and spatial scales pertinent to human migrations.

### **Course format:**

While some of our meetings will follow a standard presentation-by-the-instructor format, most will be based on in-class discussion by students of assigned readings with the instructor as facilitator. The course is originally designed with at least one "free slot" for the study of a migration event/type to be selected by the students, but this number might increase depending on student interest.

### **Evaluation:**

Value in parenthesis represents weight of item on final grade. All items refer to individual efforts

1. Brief – 2 to 3 minute - introduction to particular readings. (15%)
2. Term paper (4000-6000 words) where students attempt to gauge the importance of environmental factors in influencing a migration event not discussed in class or another event in human history. (65%)
3. A 15 to 20-minute oral presentation of the term paper for the class. (20%)

### **Course Material:**

Unless otherwise noted, readings below will be made available by the instructor. Readings might change during the course according to student interest.

The books below provide more than one reading:

Climate and Human Migration: Past Experiences, Future Challenges. Robert A. McLeman, Cambridge University Press, 2014

Migration and Disruptions: Toward a Unifying Theory of Ancient and Contemporary Migrations, Brenda J. Baker and Tkaeyuki Tsuda (eds), Universtiy Press of Florida, 2015

Climate Change and Human Mobility: Global Challenges to the Social Sciences, Kirsten Hastrup and Karen F. Olwig, Cambridge University Press, 2012.

## Readings:

### 1. *Migration theory: why and how people migrate*

E.G. Ravenstein and the “Laws of Migration”, D.B. Grigg, 1977, *Journal of Historical Geography*, 3, 41-54.

A Taxonomy of Movement, in *Migration The biology of Life on the Move*, Hugh Dingle, 1996, Oxford University Press, Oxford.

Explaining migration: a critical review. Joaquín Arango 2000, *International Social Science Journal*, 52: 283–296. doi:10.1111/1468-2451.00259

The effect of environmental change on human migration. Black et al., 2011, *Global Environmental Change*, doi:10.1016/j.gloenvcha.2011.10.001

Chapters 1 and 13 of *Migrations and Disruptions. Toward a Unifying Theory of Ancient and Contemporary Migrations*. 2015. Eds. Baker, JB and Tsuda, T. University Press of Florida.

Behavioral Aspects of the Decision to Migrate, 1965, Julian Wolpert, *Papers and Proceedings of the Regional Science Association*.15, 159-169.

McLeman, Robert, *Climate and Human Migration*, Chapter 2. Cambridge University Press

Hunter et al., *Environmental Dimensions of Migration*, 2015, *Annu. Rev. Sociol*, 41

### 2. *Case studies*

#### 2.1 Glacial cycles and movement out of Africa

Timmermann & Friedich, 2016, Late Pleistocene climate drivers of early human migration, *Nature*, 539, doi:10.1038/nature19365

DeMenocal & Stringer, *Climate and peopling of the world*, 2016, *Nature*, 538

Stewart & Stringer, 2012, *Human Evolution out of Africa: The role of refugia and climate change*, *Science*, 335

Carto et al., 2009, *Out of Africa and into an ice age: on the role of global climate change in the late Pleistocene migration of early modern humans out of Africa*.

Kim et al, 2014, *Khosian hunter-gatherers have been the largest population throughout most of modern-human demographic history*, *Nature communications*

#### 2.2 Peopling of the Americas

Fiedel, 2000, *The peopling of the New World: Present evidence, new theories and future directions*, *Journal of Archaeological Research*, 8

Pitblado, 2011, A tale of two migrations: Reconciling recent biological and archaeological evidence for the Pleistocene peopling of the Americas, *Journal of Archaeological Research*, 19

Montenegro et al, 2006, Parasites, paleoclimate and the peopling of the Americas: using the hookworm to time to Clovis migration, *Current Anthropology*, 47

### 2.3 Settlement of Polynesia

Kirch, 2010, Peopling of the Pacific: A Holistic Anthropological Perspective, *Ann. Rev. Anthropology*, 39.

Avis et al., 2007, The Discovery of Western Oceania: A new perspective. *Journal of Island and Coastal Archaeology*, 2.

Montenegro et al., 2016, Using seafaring simulations and shortest-hop trajectories to model prehistoric colonization in Remote Oceania, *PNAS*, doi/10.1073/pnas.1612426113

### 2.4 Drought

McLeman, 2014, ch.2

MacLeman et al, 2013, What we learned from the Dust Bowl: lessons in science, policy and adaptation. *Population and Environment*, 35

Hodell et al., 2005, Terminal Classic drought in northern Maya lowlands inferred from multiple sediment cores in Lake Chichancanab (Mexico), *Quaternary Science Reviews*, 24

Medina-Elizalde & Rohling, 2012, Collapse of Maya Civilization Related to Modest Reduction in Precipitation, *Science*, 335

Carleton et al., 2014, A reassessment of the impact of drought cycles on the Classic Maya, *Quaternary Science Reviews*, 105.

### 2.5 Recent Migration into the US

Feng et al., 2010, Linkages among climate change, crop yields and Mexico-US cross-border migration, *PNAS*, 107, 14257-14262

Baker and Tsuda, 2015, ch.8

Hunter et al., 2013, Rainfall Patterns and US Migration from Rural Mexico, *International Migration Review*, 4.

### 2.6 Future Climate Change

Hastrup and Olwig, 2012, Introduction **and** ch. 2

McLeman, 2014, ch.7

### 2.7 Extreme events

McLeman, 2014, ch.4

Guimire et al, 2014, Flood induced displacement and civil conflict, *World Development*, 55

**Schedule\*:**

<b>DATE</b>	<b>THEME</b>	<b>READINGS</b>	<b>NOTES</b>
Jan 16	Theory I: Definitions and limitations	McLeman ch2 , Dingle ch 1; Wolpert; Arango	
Jan 23	Theory II Migration as disruptions and the role of the environment	Black et al.; Baker and Tsuda ch. 1 and 13; Hunter et al.	
Jan 30	Catching up		
Feb 6	Millennial time scale climate variability	Lecture	
Feb 13	Glacial cycles and movement out of Africa	Timmermann & Friedich; DeMenocal & Stringer; Carto et al; Kim et al; Stewart and Stringer	
Feb 20	Deglaciation, sea level and the peopling of the Americas,	Fiedel, 2000; Pitblado, 2011, Montenegro 2006	
Feb 27	ENSO Variability and the settlement of Polynesia	Kirch_2010, Avis et al, 2007; Montenegro 2016;	
Mar 6	Drought: urban abandonment in Mesoamerica and the Dust Bowl,	McLeman, ch.2; McLeman 2013; Carleton 2014; Hodell 2005; Medina-Elizalde, 2012	
Mar 20	Recent migration flows into the US	Baker and Tsuda, ch.8; Feng et al.; Hunter et al.	
Mar 27	Anthropogenic climate change and future migration	Hastrup and Olwig: Intro, ch. 2; McLeman, ch.7	
Apr 3**	Extreme weather events and migration	McLeman, ch. 4; Guimire et al.	
Apr 17	<b>Presentation</b>		

\*This is a tentative and flexible schedule. Specific readings and sequence of presentation might change according to class interest or other constraints. The date of the presentations is fixed. These will take place on April 17 no matter what changes might have occurred.

\*\* Instructor out of town on April 10