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Happy trails. Modern humans may have ventured out of Africa via wide rivers crossing the Sahara, in addition to or instead of migrating along the Nile River.

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Out of Africa, Across a Wet Sahara

By Michael Balter
*Science*NOW Daily News
14 October 2008

Modern humans arose in sub-Saharan Africa as early as 200,000 years ago, but our species did not venture beyond Africa until at least 80,000 years later. Just why they took so long to travel north is not clear, but many researchers have suggested that the bone-dry Sahara Desert was a major barrier to migrations from the south. Yet a new study indicates that the Sahara was crossed by wide rivers during a wet period that began about 120,000 years ago, providing a hospitable corridor for humans on the move.

The first sightings of *Homo sapiens* out of Africa, fossil skeletons from caves in modern-day Israel, are dated to between 120,000 and 90,000 years ago. Human evolution experts had long focused their attention on the most obvious corridor: The Nile River, whose previously disconnected segments between central Africa and the eastern Mediterranean Sea joined up beginning about 120,000 years ago. Recent research in North Africa, however, has uncovered stone tools and human fossils all along the Mediterranean coast and even in the Sahara. Some of these sites are dated to at least 90,000 years ago and possibly somewhat earlier, demonstrating that humans were able to survive in the area at about that time. In addition, a flurry of new climate studies suggests that the eastern Sahara received heavy rainfalls from Indian Ocean monsoons during this same period. Satellite radar imaging has revealed a system of more than 800 kilometers of channels, some more than 5 kilometers wide, now buried under the sands.

A team led by geochemist Anne Osborne of the University of Bristol in the United Kingdom set out to see whether these channels carried freshwater during the first modern human migrations. The researchers took samples of snail shells from 120,000-year-old buried sediments at two sites in Libya that are within the channels, as well as from a third site that lies outside the channels. The team found that the isotopic composition of neodymium from snails in the channels differed greatly from that in snails outside the channels. The isotopic signature of neodymium, which is found in abundance in volcanic formations, closely resembled that found in the volcanic Tibesti Mountains in the central Sahara Desert, as well as the neodymium signature found in plankton from a Mediterranean sea core off the

Libyan coast. This suggests that the water the channel snails lived in flowed from these mountains, the researchers report online this week in the *Proceedings of the National Academy of Sciences*.

The team argues that the now-buried channels were once active rivers that flowed from the Tibesti Mountains all the way to the Mediterranean and rivaled the Nile River as a thoroughfare for modern humans. That conclusion, the researchers add, could help explain the increasing evidence of human occupation in North Africa west of the Nile.

Chris Stringer, a paleoanthropologist at the Natural History Museum in London, says that the new work "highlights the importance of trans-Sahara corridors during early human history." Nevertheless, Stringer says, proving that the Sahara was a major route out of Africa will require more evidence about where the migrants came from and even which directions they traveled.