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Scripture update: El Niño and Lehi's Voyage Revisited

In recent years several scholars have drawn the attention of Latter-day Saints to the phenomenon popularly known as “El Niño.”¹ In 1990 David L. Clark highlighted the fact that a mechanism was now known to science that would permit, periodically, easterly sea travel across the Pacific, the direction Lehi's party is understood to have traveled.² ENSO, the more formal acronym for this phenomenon, comes from El Niño (the Christ child) and Southern Oscillation, referring to the fact that the changes commence in the southern Pacific Ocean. The intermittent ENSO effect creates an easterly equatorial current running counter to the prevailing westerly direction of Pacific currents and winds. The winds can even blow in reverse, thus not only allowing but encouraging sea travel to the western coast of the Americas.

In the last two decades a plethora of studies shed considerable light on the effects of El Niño and its opposite phase, La Niña.³ Some of these findings have relevance to Nephi's account of the ocean voyage. While some aspects are still only partly understood, scientists have determined that each El Niño event has a unique signature determined by its intensity, ocean temperatures, and duration. This fact has enabled them to search early weather and ocean records and trace events back over recent centuries. With that baseline, researchers are now finding other, noninstrumental, methods of tracking past ENSO events.

These include dendrochronology (measuring tree growth) in the Amazon jungle⁴ and, in separate studies, in Australian trees.⁵ Major flooding damage at a pre-Columbian temple in Peru has been linked to the destructive effects that an ENSO event can cause in Central and South America particularly.⁶ El Niño correlations have resulted from measuring carbon isotopes in stalagmites,⁷ pollen analysis in peat bogs in Florida,⁸ and lake sediments in Ecuador and Peru. The last of these promises a continual record over possibly seven millennia.⁹ In another study scientists are identifying isotopic variations in ancient coral from Papua New Guinea as far back as 130,000 years ago.¹⁰

The size of the Pacific Ocean ensures that the ENSO effect is reflected globally, even as far away

as Europe, India, and Africa. One of the leading El Niño researchers, Dr. César Caviedes of the University of Florida, has found El Niño links to accounts of major famines, hurricanes, locust plagues, and other “natural” disasters over recent centuries. Not unexpectedly, he has found it has an impact on historical events as diverse as the sinking of the Titanic, the catastrophic winter invasion of Russia by Napoleon's army, and the difficult crossing by Lewis and Clark of the Bitterroot Range of the Rocky Mountains.¹¹ Some evidence of increased intensity of ENSO events since the mid-1970s means that El Niño has also become an integral part of the ongoing global-warming debate.

What this all means to scriptural studies is that El Niño is confirmed as a permanent, long-term component of world weather that certainly operated in Book of Mormon times. In addition to providing an efficient and economical means that the Lord could have used to convey Lehi and Sariah's group east across the largest ocean on earth, the Jaredite migration may also have benefited from El Niño conditions in their journey from Asia to the New World. And, in a further boost for diffusionists, scholars are beginning to see its potential for facilitating premodern transoceanic voyaging, something the Book of Mormon has always posited.¹²

by Warren P. Aston

Independent Researcher

Notes

1. See John L. Sorenson, “Transoceanic Crossings,” in *The Book of Mormon: First Nephi, the Doctrinal Foundation*, ed. Monte S. Nyman and Charles D. Tate Jr. (Provo, UT: BYU Religious Studies Center, 1988), 263–64; David L. Clark, “Lehi and El Niño: A Method of Migration,” *BYU Studies* 30/3 (1990): 57–65.
2. Alma 22:28 states that the Nephite's land of “first inheritance” in the New World was “west of the land of Zarahemla, in the borders by the seashore.”
3. www.elnino.noaa.gov (accessed November 29, 2007) is an excellent comprehensive site with interactive links explaining the El Niño phenomenon.
4. Jochen Schöngart et al., “Teleconnection between Tree Growth in the Amazonian Floodplains and the El Niño-Southern Oscillation Effect,” *Global Change Biology* 10/5 (2004): 683–92. Abstract available at www.blackwell-synergy.com/links/doi/10.1111/j.1529-8817.2003.00754.x (accessed November 29, 2007).
5. J. C. G. Banks, “El Niño and the Australian Climate: The Dendrochronological Potential of Australian Trees for Dating Climate Extremes of Drought, Fire and Flood,” in *El Niño—History and Crisis: Studies from the Asia-Pacific Region*, ed. Richard H. Grove and John Chappell (Cambridge: White Horse, 2000), 224–30.

6. See the comments made in a 1998 NOVA documentary concerning the impact of ENSO in Peru anciently and in the present: www.pbs.org/wgbh/nova/transcripts/2512elnino.html (accessed November 29, 2007).

7. Amy Frappier et al., “El Niño Events Recorded by Stalagmite Carbon Isotopes,” *Science* 298 (18 October 2002): 565. Other researchers have since added to these data at other locations. See, for example, Matthew S. Lachniet et al., “A 1500-Year El Niño/Southern Oscillation and Rainfall History for the Isthmus of Panama from Speleothem Calcite,” *Journal of Geophysical Research* 109/D20 (October 27, 2004): 117, suggesting a correlation between rainfall and the collapse of the Maya culture.

8. Timme H. Donders et al., “Mid- to Late-Holocene El Niño-Southern Oscillation Dynamics Reflected in the Subtropical Terrestrial Realm,” *Proceedings of the National Academy of Science of the USA (PNAS)* 102/31 (2005): 10904–8. Abstract available at www.pnas.org/cgi/content/full/102/31/10904 (accessed November 29, 2007).

9. Melanie A. Riedinger et al., “A ~6100 ¹⁴C yr Record of El Niño Activity from the Galápagos Islands,” *Journal of Paleolimnology* 27/1 (2002): 1–7. An abstract of another study involving sediment dating over longer periods is G. Skilbeck et al.,

“Century-to-decade scale modulation of ENSO recorded by postglacial laminated sediments from the Peru continental margin,” available at www.science.uts.edu.au/des/StaffPages/GregSkilbeck/monaco-abstract-2004.pdf (accessed November 29, 2007).

10. Alexander W. Tudhope et al., “Variability in the El Niño Southern Oscillation through a Glacial-Interglacial Cycle,” *Science* 291 (February 23, 2001): 1511–17; an illustrated summary is available at www.ncdc.noaa.gov/paleo/pubs/tudhope2001/tudhope.html (accessed November 29, 2007).


11. César Caviendes, *El Niño in History: Storming through the Ages* (Gainesville: University Press of Florida, 2001).

12. David L. Clark’s original primary citation: Ben R. Finney, “Anomalous Westerlies, El Niño and the Colonization of Polynesia,” *American Anthropologist* 87/1 (1985): 9–26, focused on easterly Polynesian migrations. See also Finney’s “Voyaging and Isolation in Rapa Nui Prehistory,” available at <http://pvs.kcc.hawaii.edu/rapanui/finney.html> (accessed November 29, 2007). Other researchers have also proposed ENSO-assisted migration scenarios; see, for example, Atholl Anderson et al., “Prehistoric maritime migration in the Pacific Islands: An hypothesis of ENSO forcing,” *The Holocene* 16/1 (2006): 1–6.

DSS Library Wins ALA Choice Award

Each year in January, *Choice* magazine recognizes a short list of the best academic titles from among the 7,000 or so reviewed in the previous year. Among the winners of the January 2008 awards is BYU’s *Dead Sea Scrolls Electronic Library*, which was produced by the Neal A. Maxwell Institute for Religious Scholarship and published by Brill Academic Press. This electronic database contains searchable texts of all of the published non-biblical scrolls. High resolution images of the scrolls and a complete English translation accompany the texts. The latest version of the database, published at the end of 2006, is the culmination of 10 years of work by the Maxwell Institute and represents the fruits of more than 50 years of research in publish-

ing and translating the Dead Sea scrolls. The database was edited by Professor Emanuel Tov of the Hebrew University of Jerusalem and produced by Professor Noel B. Reynolds and Kristian S. Heal of the Maxwell Institute. Students and faculty at BYU may enjoy the learning and research opportunities provided by the database thanks to a special arrangement that the Maxwell Institute worked out with Brill that allows for the Institute to distribute copies of the database on campus at little or no cost.

Choice magazine is published by the American Library Association and is distributed to more than 35,000 libraries, academics, and administrators each year. The Outstanding Academic Title awards are conferred based on ratings in six criteria, including academic excellence and value to undergraduate students. 

Submissions Welcome

Scripture Updates are brief (no more than 600 words), well-written summary reports of work dealing with LDS scriptures, particularly the Book of Mormon, that has been completed or is ongoing. They are intended to keep our readers current on new insights, developments, and discoveries relating to the scriptures. Touching on issues such as the language of scripture, literary composition, the history of the texts, translation matters, and comparisons with other scriptures or writings, as well as issues that emerge from various expositions of particular passages or teachings in the texts, they represent work that is being pursued by scholars in a number of relevant fields of study—textual and literary studies, linguistics, history, cultural studies, and so forth. The goal of these Scripture Updates is to foster a deeper understanding and appreciation of the scriptures of the restoration.

We invite readers to contribute to Scripture Updates by sending an e-mail to the attention of Matt Roper: matt_ropers@byu.edu.