

SECTION 6: WEATHER AND CLIMATE

Editor's Note: *This paper is the full version of the executive summary available at http://www.fairlds.org/DNA_Evidence_for_Book_of_Mormon_Geography/. This paper was last updated 11 October 2008.*

This document is a partial analysis of the scholarly merits of the evidence and research used by Rodney Meldrum¹ in his firesides and DVD presentation, *DNA Evidence for Book of Mormon Geography*.² Neither FAIR nor this document take any position on the geographic location of Book of Mormon events.³ It is important, however, that Meldrum's theories be analyzed according to the same standards by which other Book of Mormon geography theories are evaluated. To avoid confusion, this paper refers to Meldrum's geographic model as the Limited North American Model, or LNAM.⁴ This document is just one in a series of such analytical documents.

In this document we examine Meldrum's research and conclusions relative to weather and the climate. This examination addresses, specifically, Part 7 of the DVD presentation, which is titled "Weather and Climate: Indications of Weather and Climate of the Book of Mormon."

ROUTE OF THE SEA VOYAGE

In describing the voyage of Lehi and company from the Old World to the New, the DVD lays out a course that takes them from Arabia, around the southern tip of Africa, across the Atlantic, to North America.

¹ This paper follows the scholarly custom of referring to an individual, at first reference, by full name and then subsequently referring to the individual by last name only. We fully recognize Rodney as a brother in the gospel, but in discussing secular issues (such as scholarly research and geographic models) it was felt that continually prefacing his name or the name of any other referenced scholar or individual with "Brother" or "Sister," while accurate, would distract from the readability of the paper.

² Rodney Meldrum, *DNA Evidence for Book of Mormon Geography: New scientific support for the truthfulness of the Book of Mormon; Correlation and Verification through DNA, Prophetic, Scriptural, Historical, Climatological, Archaeological, Social, and Cultural Evidence* (Rodney Meldrum, 2008). The DVD is in sections; citations in this paper reference the DVD's section number and title, followed by an approximate time stamp from the DVD.

³ FAIR recognizes that faithful individuals and scholars can honestly disagree on where Book of Mormon events took place; there is no revealed or officially accepted geography. FAIR provides an online reference to over 60 different geographic models at http://en.fairmormon.org/Book_of_Mormon_geography (click on Book of Mormon Geographical Models).

⁴ Meldrum's model places Book of Mormon peoples in an area roughly covering the Atlantic seaboard to the Rocky Mountains. This name was chosen as descriptive of the general model. We recognize that Meldrum may pick a different name at some point and would invite him to do so.

If they left here in Saudi Arabia and went into the Great Deep here, the natural currents would have taken them around Cape Horn of Africa, up through the Atlantic over to this and then ended up over here, somewhere either on the Eastern Coast or up into the Gulf of Mexico.

The surface of the ocean currents basically go counterclockwise in the southern hemisphere and clockwise in the northern hemisphere.⁵

There are two problems with the crossing that the DVD posits: First, it doesn't take prevailing winds into account and, second, it doesn't take the variability of the currents into account.

We learn from the Book of Mormon that the ship used by Lehi and his party did not drift on the currents; it was actively pushed by the wind (see 1 Nephi 18:8). If this is the case, then it doesn't make sense to only look at current charts. Instead, one needs to consider the prevailing winds that would push Lehi's ship.

For thousands of years sailors have exploited the monsoon winds, which are strong at various times of the year around Arabia. As Warren and Michaela Aston note:

Departing [anywhere on the Arabian coast] should allow travel east across the Indian Ocean utilizing the various monsoon winds. In fact, our word monsoon derives from the Arabic *mawsim*, meaning "the date for sailing from one port in order to reach another." Mariners have used these winds from the coast of Oman for many thousands of years, making Oman a major center for sea trade extending as far east as China, as well as to the east coast of Africa and Egypt.⁶

Taking advantage of the prevailing winds is also consistent with the likely time of year when the group would have set sail, in mid-to-late summer.⁷ The monsoon winds, which blow ships toward the east off of Arabia, would be in full force in August.

Of course, the DVD's journey has the Lehite ship going against the prevailing winds, drifting with the currents westward from Arabia and from there around the African continent.

The reliance on currents to move the Lehite ship through the path described is very simplistic. While it is possible that the currents could have taken the ship in the way the DVD describes (if we ignore for a moment Nephi's statement that the wind drove the ship), there are many exceptions and complications to using those currents. The maps of ocean currents may be right, but the use to which they are put is problematic.

⁵ Meldrum, *DNA Evidence*, section 7, "Weather and Climate," 0:20-0:57.

⁶ Warren P. Aston and Michaela Knoth Aston, *In the Footsteps of Lehi* (Salt Lake City: Deseret Book Company, 1994), 20.

⁷ Such a date corresponds with the scriptural account which indicates that the pilgrims took "fruits and meat and honey in abundance." Such gathering makes sense at the end of the growing season. See David L. Clark, "Lehi and El Niño: A Method of Migration," *Brigham Young University Studies* 30/3 (Summer 1990): 64.

For example, the Somali Current, which is likely the current the DVD describes as going down the eastern coast of Africa, actually reverses direction twice a year. It can be used to travel north or south, depending on the time of year. The same is true of the Equatorial Current, which can be used to travel either east or west across the Atlantic.

Generations of sailors and traders would contest the idea that it would make more sense to go west from Arabia toward the Atlantic than east toward China. Polynesians were making eastward sea voyages across the Pacific thousands of years ago. The DVD doesn't consider a Pacific crossing because it doesn't fit with the LNAM's requirement that the Lehites make landfall at the Mississippi River delta. (See the next section.)

The idea of crossing the Pacific in preference to the Atlantic was addressed almost two decades ago.⁸ In a *BYU Studies* article, David Clark demonstrated how known weather and current patterns make a Pacific crossing plausible. If we assume a likely departure with the monsoon, the currents even develop at the proper time of the year to aid Lehi's journey. There is an extensive published literature on these matters that the LNAM fails to engage.⁹

EXAMINING PROPOSED LANDING SITES

The LNAM's geography requires an Atlantic crossing and landing somewhere with access to the eastern American coast. This ignores the textual evidence of the Book of Mormon itself that suggests a western-shore landing for the Lehite group. For example, the Mulekites were focused around the east coast. (In any geography, one would expect them to spread from the coast where they landed.) Yet, despite the Mulekites being on the east,¹⁰ the Nephites do not encounter them at their own landing or in the city of Nephi—the two groups come in contact only as Mosiah's group moved further inland and down from the city of Nephi to Zarahemla. This virtually requires that Nephite refugees be traveling in an eastward direction, requiring a landing on the west (Pacific) coast. Regardless of whether one pictures the areas as large or small, the general patterns of movement can be easily inferred from the text.

The Book of Mormon describes the Lamanites in the west as “spread through the wilderness on the west, in the land of Nephi; yea, and also on the west of the land of Zarahemla, in the borders by the seashore, and on the west in the land of Nephi, in the place of their fathers' first inheritance, *and thus bordering along by the seashore*” (Alma 22:28, emphasis added). Thus, the land of first inheritance is on the western seashore—it

⁸ Clark, “Lehi and El Niño: A Method of Migration,” 60.

⁹ The long history of this concept can be explored in such references as: C. Douglas Barnes, “Lehi's Route to America,” *Improvement Era* (1939); Lynn M. Hilton and Hope A. Hilton, “In Search of Lehi's Trail—Part 2: The Journey,” *Ensign* (October 1976); John L. Sorenson, *An Ancient American Setting for the Book of Mormon* (Salt Lake City and Provo, Utah: Deseret Book Company and FARMS, 1985), 138; John L. Sorenson, “Transoceanic Crossings,” *First Nephi: The Doctrinal Foundation: Papers from the Second Annual Book of Mormon Symposium*, edited by Monte Nyman and Charles Tate (Provo, Utah: Religious Studies Center, Brigham Young University, 1988); John W. Welch, “Winds and Currents: A Look At Nephi's Ocean Crossing,” *Reexploring the Book of Mormon: The F.A.R.M.S. Updates* edited by John W. Welch (Salt Lake City and Provo, Utah: Deseret Book Company and FARMS, 1992), 53–55; Hugh Nibley, *Teachings of the Book of Mormon* (Provo, Utah: FARMS, 1993), 1:232.

¹⁰ See Omni 1:21, Alma 8:7, Alma 22:30–31, Helaman 6:10, and Ether 9:3.

would be very strange for the Lehites to land on the eastern seashore (or in the southern Gulf of Mexico, as in the LNAM) and travel across the entire landmass to the opposite sea before establishing their land of first inheritance.

The LNAM uses Lake Michigan as the “sea west,” and yet this is nowhere near the LNAM’s land of first inheritance, hundreds of miles to the south along the Gulf of Mexico. It seems most likely that Lehi approached from the Pacific, landing somewhere on the western coast.¹¹ If Meldrum disagrees with the textual evidence cited, he would be more persuasive if he consulted the previous literature and demonstrated its errors.¹²

A QUESTION OF SEASONS

The DVD claims that a Mesoamerican model is impossible because there are no seasons in Mesoamerica:

So, in Alma 46, it does say a couple of things about weather. It says that they had seasons. Now, are there seasons in Guatemala? Well, they do have two seasons. You have hot and “oh my gosh!” it is really hot. That is the two seasons that you typically have...it does snow and hail and so forth on those mountains [in Guatemala], but this is not where the Book of Mormon was supposed to have taken place. That has all been placed down in the jungle areas. So, this is...by nature of the climate, they had seasons.¹³

Unfortunately, this analysis of the available data is lacking. The scripture in Alma 46:40 is below. The aspects the DVD considers important are underlined:

And there were some who died with fevers, which at some seasons of the year were very frequent in the land—but not so much so with fevers, because of the excellent qualities of the many plants and roots which God had prepared to remove the cause of diseases, to which men were subject by the nature of the climate (Alma 46:40)

Note that there is only one phrase that refers to seasons: “which at some seasons of the year.” This is where the faulty analysis comes in—assuming that *season*, as used in this verse, refers to climatological divisions of the year. It may, in fact, be that the term is a synonym for time, as in “which at some times of the year.” The phrase “the nature of the climate” works equally well as a qualifier for “some times of the year” as it does for “some seasons of the year.”

¹¹ We are not the first to point this out. Sorenson notes: “Nephi does not give us useful information about where the ship landed, but two later statements in the scripture do. Mosiah 10:13 mentions ‘the land of their [the Lamanites] first inheritance, after they had crossed the sea.’ Then Alma 22:28, as part of a comprehensive description of geography in the land of promise, speaks of Lamanites spread in the wilderness ‘on the west in the land of Nephi, in the place of their fathers’ first inheritance, and thus bordering along by the seashore.’ When this information is put together with other geographical statements, it becomes clear that the land referred to was on the ‘west sea’ coast at the southern extreme of the territory spoken of in the Nephite record.” (Sorenson, “Transoceanic Crossings,” 266.)

¹² A good introduction is John L. Sorenson, *Mormon’s Map* (Provo, Utah: FARMS, 2000), 29–30.

¹³ Meldrum, *DNA Evidence*, section 7, “Weather and Climate,” 1:55-2:20.

As further evidence for this reading, consider a similar word usage of the term *season* by the same Book of Mormon author, just a few chapters later in Alma 57:17–18, in which there are two instances of *season*, both synonymous with time.

But even if one was to grant that the usage might be climatological in nature, does that make DVD's analysis any more correct? Sadly, the analysis still fails because Meldrum doesn't realize that there really *are* seasons in Mesoamerica. They are different from each other, and they are not "hot and oh-my-gosh hot."

In Guatemala there is a wet season from May to October and a dry season from November to May, which would have been essential for an agricultural society.¹⁴ The seasons also affected when wars were fought.¹⁵ Meldrum implies that "seasons" must mean broad temperature changes as in North America, otherwise they aren't really seasons—he uses humor to dismiss this point, but it is an important one that should not be glossed over. Central America has seasons as much as North America does. We cannot, then, use the presence of seasons to distinguish the validity of a North American geographical model versus a Central American one.

IS MESOAMERICA REALLY HOT?

As noted in the previous section, Meldrum states that Mesoamerica is "really hot" and that those holding to a Mesoamerican geography believe that Book of Mormon events took place "in the jungle." These are misrepresentations of the positions held by those Meldrum considers ideological opponents.¹⁶ Gardner's work can help correct the DVD's mistakes:

According to Sorenson's geographical hypothesis, the Lehites landed on the Pacific coast of Guatemala. The Lamanites remained there, but the Nephites probably went to the interior highlands.

Within 1.8 miles, the Guatemalan piedmont begins to rise away from the coastal plain...They left what is now termed the *tierra caliente*, or hot country and entered the *tierra temporada*, or temperate country, which is between 2,500 and 5,500 feet in elevation. They would have left temperatures ranging from 85 to 90 degrees F. in the daytime, and entered a

¹⁴ Brant A. Gardner, *Second Witness: Analytical and Contextual Commentary on the Book of Mormon*, 6 volumes (Salt Lake City: Greg Kofford Books, 2007), 2:89.

¹⁵ Sorenson, *An Ancient American Setting*, 270–276; John L. Sorenson, "Seasonality of Warfare in the Book of Mormon and in Mesoamerica," *Warfare in the Book of Mormon*, edited by Stephen D. Ricks and William J. Hamblin (Salt Lake City and Provo, Utah: Deseret Book Company and FARMS, 1990), 445–477; John L. Sorenson, "Seasons of War, Seasons of Peace in the Book of Mormon," *Rediscovering the Book of Mormon*, edited by John L. Sorenson and Melvin J. Thorne (Salt Lake City and Provo, Utah: Deseret Book Company and FARMS, 1991), 249–255. Sorenson updates his earlier views in John L. Sorenson, "Comments on Nephite Chronology," *Journal of Book of Mormon Studies* 2/2 (1993): 208–212.

¹⁶ As stated at the first of this paper and in all the other reviews of Meldrum's presentations, FAIR does not endorse one geography over another. We do, however, feel it is incorrect to misrepresent the "other side" when one is describing that side to an audience, as the DVD attempts to do.

region where the range is from 75 to 80 F. with night time temperatures a pleasant 60 to 70 degrees F.¹⁷

The area suggested for the Nephites in a Mesoamerican model is not particularly hot, nor did it take place only in jungle areas. The DVD does not fairly represent that which it criticizes.

If they [Book of Mormon events] happened down in Guatemala, wouldn't they have mentioned something about heat? Well, it turns out there is twice as many references to snow as there is about heat. There is only one time in the Book of Mormon where it specifically mentions heat. In Alma 51, it says "That they had been fighting all day long and that sleep had overpowered them because they were much fatigued which was caused by labors and heat of the day."¹⁸

The DVD again presumes that Guatemala is so hot that the Nephites would have mentioned it—but, the climate is more pleasant than the Arabian desert in which Lehi's family spent eight years. Jerusalem itself has average daily temperatures of 71-88 degrees F. in July.¹⁹ Since their new land was the only place that all other Nephite recordkeepers would have known, why would they comment on the heat? It would have been normal to them and therefore not worthy of mention.

Meldrum says, "When I lived in Arizona for several years, after a few years, 115 wasn't a big deal. Go play golf, it is great—115 degrees."²⁰ If 115 degrees wasn't a big deal to him after a few years, why does he think 85 degrees would be a big deal after a few hundred years in a society full of people with no mechanical conveniences, who do all their farming or labor by hand? He is reading the text as a modern North American, not an ancient author.

In an online posting, Meldrum claims:

Imagine an army in Mesoamerica wearing heavy, thick clothing in the tropical heat...yet here they are! It must have been nearly unbearable to wear such clothing in the jungles of Mesoamerica. An army of heavily dressed men in mid-summer in Mesoamerica...not likely.²¹

We do not have to imagine this scenario which strikes Meldrum as so unlikely, since this is exactly what Mesoamerican armor looked like:

¹⁷ Gardner, *Second Witness*, 2:88-89.

¹⁸ Meldrum, *DNA Evidence*, section 7, "Weather and Climate," 4:30-5:00.

¹⁹ See <http://www.wordtravels.com/Cities/Israel/Jerusalem/Climate> (last accessed October 10, 2008).

²⁰ Meldrum, *DNA Evidence*, section 7, "Weather and Climate," 5:00-5:20.

²¹ DNA Truthseeker [Rod Meldrum], "Dna Evidence For Book Of Mormon Geography," Mormon Apologetics and Discussion Board, May 12, 2008, ellipsis in original. <http://www.mormonapologetics.org/index.php?showtopic=35020&view=findpost&p=1208425874> (last access October 10, 2008).

The Aztec army dressed much differently than the rest of the culture. The main reason for this was for protection in times of war. The dress of higher warriors was very elaborate. Their bodies were covered with a close vest of quilted cotton. Although impenetrable the garment was very light.²²

Extensive documentation is available; the Spaniards even abandoned their own armor and used the quilted Mesoamerican armor. What Meldrum presents as “not likely” is amply attested by history.²³

HEAT AT THE END OF THE YEAR

The DVD also misses the importance of the example of heat in Alma 51. The battle in which the Lamanites are exhausted “by the labors and heat of the day” happens on the last day of the year. In a Mesoamerican setting, this would put them in the dry season; in a North American setting, it would be mid-to-late winter. Meldrum’s website claims that Christ’s death in the “first month” proves that the Nephite first month was equivalent to April.²⁴ However, this theory neglects the fact that the Nephite calendar was changed following the sign of Christ’s birth (3 Nephi 2:8). This does not help us to date a year-end battle that came *before* Christ’s birth, since the calendar change had not yet been made. (The exact date was probably around February 25.)²⁵

Given when the battle in Alma 51 likely took place, in which location was there more likelihood of the type of exhaustion of which the scripture speaks? On this point, the Mesoamerican theorists likely have an edge over a model placed in the Northeastern United States.

The lifestyle and warfare of the Lamanite and Nephite dissenters also seems to have been conducted nearly naked over long periods of time.²⁶ This makes little sense in a North

²² “The Aztec Culture,” on-line at <http://www.angelfire.com/az/atid410> (last accessed May 25, 2008).

²³ See William J. Hamblin, “Armor in the Book of Mormon,” *Warfare in the Book of Mormon*, edited by Stephen D. Ricks and William J. Hamblin (Salt Lake City and Provo, Utah: Deseret Book Company and FARMS, 1990), 400–424.

²⁴ “What indications does the book itself give about climate?” Frequently Asked Questions, <http://www.bookofmormonevidence.org/FAQ.php> (last accessed August 28, 2008).

²⁵ The issue of the Nephite calendar system(s) is a complex one. The best introduction is Randall P. Spackman, “The Jewish/Nephite Lunar Calendar,” *Journal of Book of Mormon Studies* 7/1 (1998): 48-59. As Spackman notes, there is considerable evidence that the Nephites used (at least) a lunar calendar similar to the Jewish system, and the use of multiple calendars is attested in a variety of ancient cultures, including Mesoamerica. Whether Lamanites would have used a similar lunar system is unknown, given that they had rejected Nephite observance of the law of Moses and its lunar requirements. In Randall P. Spackman, “Introduction to Book of Mormon Chronology,” *FARMS Reprint Series* (Provo, Utah: Foundation for Ancient Research and Mormon Studies, 1993), 30, Spackman argues that the Nephite new year would have been on February 25’s new moon in year twenty-six of the reign of the judges.

²⁶ Meldrum’s website argues that “It would seem that a loincloth was the exception rather than the rule in warfare at that time. Most wars don’t mention loinclothes except in this circumstance [Alma 43:20?] which would indicate that generally they were well dressed as indicated by the Book of Mormon itself.” This claim is unsubstantiated: there are multiple references to Lamanites dressing in nothing but loincloths (see, for example, Enos 1:20, Mosiah 10:8, Alma 3:5, Alma 43:20, Alma 44:18, and 3 Nephi 4:7). Though they vastly outnumber the Nephites, the Lamanites are described as “exceedingly afraid” because the Nephites have armor and thick clothing (Alma 43:20; see also 44:9). This hardly suggests, as Meldrum argues, that thick clothing was commonplace—if so, why would the Lamanites be afraid? And, why does the text say that they later adopted the armor and thick garments of skins, if Meldrum’s claim about thick clothing being standard is true (Alma 49:6 and Helaman 1:14)?

American geography where a year-end battle would have likely been in cold temperatures or even snow.

Meldrum's website claims that "twice [the Book of Mormon] mentions frozen water (snow/hail)."²⁷ While true, his examples do little to narrow down the climate in the New World. Snow is mentioned only by Nephi, and his home city of Jerusalem certainly gets snow.²⁸ As for hail, one review article noted, "There is no question that the hail problem is a less serious one in the tropics than at mid-latitudes....Nevertheless, when hailstorms occur, they cause major damage to...crops."²⁹ Hail is, in fact, mentioned twice in the Book of Mormon: once metaphorically (Helaman 5:12) and the other literally (Mosiah 12:6), emphasizing the damage to crops.

The Mesoamerican model is certainly not threatened by a presumed lack of hail. Climatological experts note:

Mexico. A very large number of stations have reported experiencing hail....

Costa Rica. A well-marked hail season between April and September is evident....

Honduras. April to October is the main hail season....

Venezuela.....Severe hail fell....It was 40 cm deep,...and many orchards were destroyed. The hailstones were large enough to kill hens and turkeys and harm human beings. Twenty houses were destroyed and branches torn from trees...³⁰

The Bible has hail in Egypt (Exodus 9) and hail was not unfamiliar to the Jews (see, for example, Job 38:22; Psalms 18:12–13, 78:47–48, 105:32, 148:8; and Isaiah 28:2). Would we argue that Egypt or Israel is therefore in a cool, temperate climate?

A LACK OF TREES?

The DVD also sees evidence for a North American setting for the Book of Mormon in Helaman's reference to a lack of trees:

See weather is one thing, climate is another. Are there any indications of that? Well, there are a couple of things; here in Helaman it says, "It came to pass as timber was exceedingly scarce in the land northward, they did send forth much by the way of shipping."

²⁷ "What indications does the book itself give about climate?" Frequently Asked Questions, <http://www.bookofmormonevidence.org/FAQ.php> (last accessed August 28, 2008).

²⁸ "Book of Mormon Anachronisms: Snow," *FAIR wiki*, http://en.fairmormon.org/Book_of_Mormon_anachronisms/Snow (accessed August 28, 2008).

²⁹ E.M. Frisby and H.W. Sansom, "Hail Incidence in the Tropics," *Journal of Applied Meteorology* 6 (April 1967): 339.

³⁰ *Ibid.*, 342-343.

That tells us two things. Number one is wherever they were at, they were using ships and they were shipping, which means that they had to have been using some kind of waterways. It also says that timber is exceedingly scarce. Well, how could there have been a lack of timber in a tropical rain forest, how are you going to run out of timber?³¹

Such statements ignore both the Book of Mormon text and the Mesoamerican model being criticized. The Book of Mormon text states that the area without trees was only in the Nephite “land northward” (Helaman 3:3–10).

It is also important that we not read the text through modern eyes and circumstances, but historic ones. As Brant Gardner notes, “Much of Mesoamerica generally is heavily forested today, but it has reached that state only after a thousand years of recovering from the high densities of the Maya and Teotihuacano populations and their lifestyles.”³²

We cannot look at modern aerial photos of the Mesoamerican jungle and decide that this is what it was like in Nephite times. There is extensive archaeological evidence for this kind of deforestation in Central America, contrary to the DVD’s claims.³³ The fact that ancient cities are now difficult to find, often being covered with vegetation, provides good evidence that there have been significant changes since earlier times.

If the DVD is to place its model in North America, it needs to demonstrate that its “land northward” in Upper Canada had a serious deforestation problem between the birth of Christ and about A.D. 400.

WHIRLWINDS AND TEMPESTS

The DVD argues that some Book of Mormon weather features make a Mesoamerican model impossible:

There are also things in the Book of Mormon in Third Nephi. It talks about that there was tempests and whirlwinds and thunderings and lightnings and so forth. Well, what is a tempest and what is a whirlwind? Well, I think, a whirlwind is pretty clear—what that is—a tornado. I think this is very interesting: It says that there were some people who were actually carried away in the whirlwind.

But see, that is what differentiates a tempest which I believe to be a hurricane from a tornado, because see in a hurricane it will blow you to something, but when you eventually hit something that is stationary and that will stop you. As far as I know that is the only weather phenomenon that can literally take a person and, poof, they are just gone.

³¹ Meldrum, *DNA Evidence*, section 7, “Weather and Climate,” 5:20-6:30.

³² Gardner, *Second Witness*, 5:62.

³³ Gardner, *Second Witness*, 5:62-63.

So, that brought me to the next question, where do tornadoes occur? So, in doing my research there, “World Tornadoes and Agricultural Areas,” this is from the Thinkquest here, tornadoes from 1930 on. It turns out that tornadoes don’t occur in equatorial regions at all, because the conditions necessary for their very formation are absent. Not there.

You know, it is right here, Central America, the location where the Book of Mormon was supposed to have happened has never had a single recorded tornado. Whereas up here in North America, in our proposed Book of Mormon Lands, this is tornado valley [laughs]. The highest concentration of tornadoes anywhere on the planet happens there.³⁴

The DVD is simply mistaken. The first mistake is to presume that a *whirlwind* must be a tornado—it could be a hurricane, and *tempests* could be storms, which they clearly are in Nephi’s account of their sea crossing:

Wherefore, they knew not whither they should steer the ship, insomuch that there arose a *great storm*, yea, a great and terrible *tempest*, and we were driven back upon the waters for the space of three days; and they began to be frightened exceedingly lest they should be drowned in the sea; nevertheless they did not loose me.

And on the fourth day, which we had been driven back, the *tempest* began to be exceedingly sore (1 Nephi 18:13–14, emphasis added).

The text gives no hint that the ship was driven backward stern-first—instead, it was likely sailing before the wind, but turned one hundred and eighty degrees. It might be difficult for a hurricane to blow a ship backward for several days without sinking it—in this case, Nephi likely uses the term “tempest” to mean simply “a great storm.” The DVD’s reading of the text is not internally consistent.

But, even if we grant the assumption that Book of Mormon “whirlwinds” must be tornadoes, it is important to note that tornadoes *do* happen in Central America, even if they are not as common as in the United States. A tornado that occurred in Guatemala on August 29, 2007, was captured on video, and is available after a quick YouTube search.³⁵ Mexico also has tornadoes.³⁶

It is also noteworthy that the whirlwinds and tempests happened at Christ’s crucifixion; they were abnormal, and part of the impressive destruction that accompanied the prophesied signs. The Book of Mormon never claims that these were frequent, common events—merely that there was a particularly dramatic display to bear witness of the Messiah’s death.

³⁴ Meldrum, *DNA Evidence*, section 7, “Weather and Climate,” 7:18-9:00.

³⁵ See <http://www.youtube.com/watch?v=vCOI5pqFWWA> and <http://www.youtube.com/watch?v=p8z40dwQujw> (accessed October 10, 2008).

³⁶ See “Heat Waves and Tornadoes,” <http://www.yucatanliving.com/news/midsummers-news-in-the-yucatan.htm> (accessed October 10, 2008).

The DVD also fails to mention or account for the extensive literature on the destruction recounted in Third Nephi. Scholars have persuasively argued that all the observed phenomena (e.g., lightning, light sources which will not burn, thick darkness, earthquakes, fire, flooding, widespread destruction) match a severe volcanic eruption.³⁷ Volcanoes are significantly absent from a North American geography for the Book of Mormon, and the DVD's proposed earthquakes would not last long enough. This is a weakness which the LNAM never addresses.

CONCLUSION

The DVD's treatment of climate and weather relative to Book of Mormon geography is disappointing. It contains many errors in its critique of competing geographic models. The North American model has not been shown to uniquely match most of the Book of Mormon's requirements. The DVD ignores alternate readings and previous work on the subject. Most importantly, its discussion of landing sites for the Lehi colony contradicts multiple Book of Mormon passages.

³⁷ Sorenson, *An Ancient American Setting*, 318–325; Bart J. Kowallis, "In the Thirty and Fourth Year: A Geologist's View of the Great Destruction in 3 Nephi," *Brigham Young University Studies* 37/3 (1997–1998); "When Day Turned to Night," *Journal of Book of Mormon Studies* 10/2 (2001): 66–67; Benjamin R. Jordan, "Volcanic Destruction in the Book of Mormon: Possible Evidence from Ice Cores," *Journal of Book of Mormon Studies* 12/1 (2003): 78–87.