5.75" x 10"

WEEK 7 CLIMATE CHANGE

Next Week: Midpoint

sites ALIVE! www.sitesalive.com

Follow online at: sitesalive.com

Team of Experts • Q&A • Ship's Log
Photos • Podcasts • Videos • Essays

Position: -47.2289, 72.21
Time: 2016-12-14 18:42:00 UTC

By Rich Wilson, Skipper
Great American IV

When we sailed east past Marion Island in the Indian Ocean a few days ago, we were 220 miles further north than when we sailed past here in Vendée Globe 2008. Then, as now, there were course restrictions for safety from icebergs breaking off Antarctica that we had to stay north of. Although we never sailed precisely at those limits, it's interesting to note that the Antarctic Exclusion Zone (Vendée Globe 2016's iceberg protection) is much further north than the series of ice gates in Vendée Globe 2008.

Of course my observation of this, and race management's placing of the ice constraints, do not constitute scientific data. But they compel me to ask our Climate expert Dr. Jan Witting whether there are more icebergs breaking off Antarctica due to a changing climate, or not? Or perhaps there is another reason that the hazard has moved north?

Research in Greenland tells that the glaciers there are melting and receding. This is known by on-site researchers, who go back year after year to establish trends in one direction or another, and by satellite photographs. Similarly for the Arctic Ocean ice, satellites show that the coverage of ice is getting smaller. The same goes for glaciers in the Himalayas.

Do any of these data persuade on their own that the climate is changing? No, but the consensus of evidence globally is substantive, and one can conclude that, yes, the climate is changing. It all rests on the data, and we must look to those experts in the field for that data, and for their insights. We can wish or hope that the climate were not changing, but we

By Dr. Jan Witting
Professor of Oceanography

As the *Great American IV* speeds along the South Atlantic, the ocean will look much the same to Rich as it did during his race in 2008. But if you look closely, there have been some pretty big changes in our global ocean and in the climate of our planet. Let's start with the biggest factor in human-caused climate change: Carbon dioxide in our atmosphere has steadily increased. In the eight years since 2008, its levels have climbed from 385 parts per million (ppm) to 407 ppm. Is this 22 ppm change a lot or a little? Measurements from air bubbles trapped in ice long time ago in the Antarctica show that this increase is much greater than what happened in the 2000 years before our industrial age. It is a lot, and it is happening quickly!

What does this mean for the ocean? Just like our atmosphere, the ocean has warmed also, but not the same everywhere. In places like the Arctic Ocean, the increase has been a lot. But elsewhere, like in the Southern Ocean that Rich is skirting right now, the ocean may actually have cooled a little. Why? The answer is the wind. What makes the wind blow is the difference in air temperature and pressure between two points. Cold air is denser and results in higher atmospheric pressure, and this high-pressure air wants to flow toward warmer, lower pressure, areas. As the planet's atmosphere warms, these differences in hot and cold are getting bigger. An example is the difference between the Antarctic cold air and the surrounding sub-tropical warm air, and the result is that the winds in the ocean around Antarctica are getting stronger. These stronger winds cool the ocean through evaporation, just like, if you are a little sweaty, you'll feel the wind start chilling you!

That, though, is climate, and what Rich has to worry about is weather---the storms and calms that our changing climate spawns. From a climate perspective, you'd predict that the storms on average have become a little stronger, but that doesn't mean that all storms are more intense. Either way, let's wish Rich and all the other skippers luck to avoid the worst ones!

NEWS EXPLORER

Find a newspaper article that focuses on international cooperation or negotiations. Possible topics include trade, climate, natural resources, space, and endangered species. Write a paragraph describing the scope of the issue. Who are the parties? What are the major points of contention? What are the benefits of cooperation? Was an agreement reached, or is one likely to be reached?

5.20” x 10”

WEEK 7 CLIMATE CHANGE

Follow online at: sitesalive.com

Team of Experts • Q&A • Ship’s Log
Photos • Podcasts • Videos • Essays

By Rich Wilson, Skipper Great American IV

When we sailed east past Marion Island in the Indian Ocean a few days ago, we were 220 miles further north than when we sailed past here in Vendée Globe 2008. Then, as now, there were course restrictions for safety from icebergs breaking off Antarctica that we had to stay north of. Although we never sailed precisely at those limits, it’s interesting to note that the Antarctic Exclusion Zone (Vendée Globe 2016’s iceberg protection) is much further north than the series of ice gates in Vendée Globe 2008.

Of course my observation of this, and race management’s placing of the ice constraints, do not constitute scientific data. But they compel me to ask our Climate expert Dr. Jan Witting whether there are more icebergs breaking off Antarctica due to a changing climate, or not? Or perhaps there is another reason that the hazard has moved north?

Research in Greenland tells that the glaciers there are melting and receding. This is known by on-site researchers, who go back year after year to establish trends in one direction or another, and by satellite photographs. Similarly for the Arctic Ocean ice, satellites show that the coverage of ice is getting smaller. The same goes for glaciers in the Himalayas.

Do any of these data persuade on their own that the climate is changing? No, but the consensus of evidence globally is substantive, and one can conclude that, yes, the climate is changing. It all rests on the data, and we must look to those experts in the field for that data, and for their insights. We can wish or hope that the climate were not changing, but we cannot deny facts.

By Dr. Jan Witting Professor of Oceanography

As the *Great American IV* speeds along the South Atlantic, the ocean will look much the same to Rich as it did during his race in 2008. But if you look closely, there have been some pretty big changes in our global ocean and in the climate of our planet. Let’s start with the biggest factor in human-caused climate change: Carbon dioxide in our atmosphere has steadily increased. In the eight years since 2008, its levels have climbed from 385 parts per million (ppm) to 407 ppm. Is this 22 ppm change a lot or a little? Measurements from air bubbles trapped in ice long time ago in the Antarctica show that this increase is much greater than what happened in the 2000 years before our industrial age. It is a lot, and it is happening quickly!

What does this mean for the ocean? Just like our atmosphere, the ocean has warmed also, but not the same everywhere. In places like the Arctic Ocean, the increase has been a lot. But elsewhere, like in the Southern Ocean that Rich is skirting right now, the ocean may actually have cooled a little. Why? The answer is the wind. What makes the wind blow is the difference in air temperature and pressure between two points. Cold air is denser and results in higher atmospheric pressure, and this high-pressure air wants to flow toward warmer, lower pressure, areas. As the planet’s atmosphere warms, these differences in hot and cold are getting bigger. An example is the difference between the Antarctic cold air and the surrounding sub-tropical warm air, and the result is that the winds in the ocean around Antarctica are getting stronger. These stronger winds cool the ocean through evaporation, just like, if you are a little sweaty, you’ll feel the wind start chilling you!

That, though, is climate, and what Rich has to worry about is weather---the storms and calms that our changing climate spawns. From a climate perspective, you’d predict that the storms on average have become a little stronger, but that doesn’t mean that all storms are more intense. Either way, let’s wish Rich and all the other skippers luck to avoid the worst ones!

NEWS EXPLORER

Find a newspaper article that focuses on international cooperation or negotiations. Possible topics include trade, climate, natural resources, space, and endangered species. Write a paragraph describing the scope of the issue. Who are the parties? What are the major points of contention? What are the benefits of cooperation? Was an agreement reached, or is one likely to be reached?

4.889" x 10.5"

WEEK 7 CLIMATE CHANGE

Next Week: Midpoint

Follow online at: sitesalive.com

Team of Experts • Q&A • Ship's Log
Photos • Podcasts • Videos • Essays

Position: -47.2289, 72.21
Time: 2016-12-14 18:42:00 UTC

By Rich Wilson, Skipper Great American IV

When we sailed east past Marion Island in the Indian Ocean a few days ago, we were 220 miles further north than when we sailed past here in Vendée Globe 2008. Then, as now, there were course restrictions for safety from icebergs breaking off Antarctica that we had to stay north of. Although we never sailed precisely at those limits, it's interesting to note that the Antarctic Exclusion Zone (Vendée Globe 2016's iceberg protection) is much further north than the series of ice gates in Vendée Globe 2008.

Of course my observation of this, and race management's placing of the ice constraints, do not constitute scientific data. But they compel me to ask our Climate expert Dr. Jan Witting whether there are more icebergs breaking off Antarctica due to a changing climate, or not? Or perhaps there is another reason that the hazard has moved north?

Research in Greenland tells that the glaciers there are melting and receding. This is known by on-site researchers, who go back year after year to establish trends in one direction or another, and by satellite photographs. Similarly for the Arctic Ocean ice, satellites show that the coverage of ice is getting smaller. The same goes for glaciers in the Himalayas.

Do any of these data persuade on their own that the climate is changing? No, but the consensus of evidence globally is substantive, and one can conclude that, yes, the climate is changing. It all rests on the data, and we must look to those experts in the field for that data, and for their insights. We can wish or hope that the climate were not changing, but we cannot deny facts.

By Dr. Jan Witting Professor of Oceanography

As the *Great American IV* speeds along the South Atlantic, the ocean will look much the same to Rich as it did during his race in 2008. But if you look closely, there have been some pretty big changes in our global ocean and in the climate of our planet. Let's start with the biggest factor in human-caused climate change: Carbon dioxide in our atmosphere has steadily increased. In the eight years since 2008, its levels have climbed from 385 parts per million (ppm) to 407 ppm. Is this 22 ppm change a lot or a little? Measurements from air bubbles trapped in ice long time ago in the Antarctica show that this increase is much greater than what happened in the 2000 years before our industrial age. It is a lot, and it is happening quickly!

What does this mean for the ocean? Just like our atmosphere, the ocean has warmed also, but not the same everywhere. In places like the Arctic Ocean, the increase has been a lot. But elsewhere, like in the Southern Ocean that Rich is skirting right now, the ocean may actually have cooled a little. Why? The answer is the wind. What makes the wind blow is the difference in air temperature and pressure between two points. Cold air is denser and results in higher atmospheric pressure, and this high-pressure air wants to flow toward warmer, lower pressure, areas. As the planet's atmosphere warms, these differences in hot and cold are getting bigger. An example is the difference between the Antarctic cold air and the surrounding sub-tropical warm air, and the result is that the winds in the ocean around Antarctica are getting stronger. These stronger winds cool the ocean through evaporation, just like, if you are a little sweaty, you'll feel the wind start chilling you!

That, though, is climate, and what Rich has to worry about is weather---the storms and calms that our changing climate spawns. From a climate perspective, you'd predict that the storms on average have become a little stronger, but that doesn't mean that all storms are more intense. Either way, let's wish Rich and all the other skippers luck to avoid the worst ones!

NEWS EXPLORER

Find a newspaper article that focuses on international cooperation or negotiations. Possible topics include trade, climate, natural resources, space, and endangered species. Write a paragraph describing the scope of the issue. Who are the parties? What are the major points of contention? What are the benefits of cooperation? Was an agreement reached, or is one likely to be reached?

4.889" x 9.75"

WEEK 7 CLIMATE CHANGE

Next Week: Midpoint

sites ALIVE! www.sitesalive.com

Position: -47.2289, 72.21
Time: 2016-12-14 18:42:00 UTC

Follow online at: sitesalive.com

Team of Experts • Q&A • Ship's Log
Photos • Podcasts • Videos • Essays

By Rich Wilson, Skipper Great American IV

When we sailed east past Marion Island in the Indian Ocean a few days ago, we were 220 miles further north than when we sailed past here in Vendée Globe 2008. Then, as now, there were course restrictions for safety from icebergs breaking off Antarctica that we had to stay north of. Although we never sailed precisely at those limits, it's interesting to note that the Antarctic Exclusion Zone (Vendée Globe 2016's iceberg protection) is much further north than the series of ice gates in Vendée Globe 2008.

Of course my observation of this, and race management's placing of the ice constraints, do not constitute scientific data. But they compel me to ask our Climate expert Dr. Jan Witting whether there are more icebergs breaking off Antarctica due to a changing climate, or not? Or perhaps there is another reason that the hazard has moved north?

Research in Greenland tells that the glaciers there are melting and receding. This is known by on-site researchers, who go back year after year to establish trends in one direction or another, and by satellite photographs. Similarly for the Arctic Ocean ice, satellites show that the coverage of ice is getting smaller. The same goes for glaciers in the Himalayas.

Do any of these data persuade on their own that the climate is changing? No, but the consensus of evidence globally is substantive, and one can conclude that, yes, the climate is changing. It all rests on the data, and we must look to those experts in the field for that data, and for their insights. We can wish or hope that the climate were not changing, but we cannot deny facts.

By Dr. Jan Witting Professor of Oceanography

As the *Great American IV* speeds along the South Atlantic, the ocean will look much the same to Rich as it did during his race in 2008. But if you look closely, there have been some pretty big changes in our global ocean and in the climate of our planet. Let's start with the biggest factor in human-caused climate change: Carbon dioxide in our atmosphere has steadily increased. In the eight years since 2008, its levels have climbed from 385 parts per million (ppm) to 407 ppm. Is this 22 ppm change a lot or a little? Measurements from air bubbles trapped in ice long time ago in the Antarctica show that this increase is much greater than what happened in the 2000 years before our industrial age. It is a lot, and it is happening quickly!

What does this mean for the ocean? Just like our atmosphere, the ocean has warmed also, but not the same everywhere. In places like the Arctic Ocean, the increase has been a lot. But elsewhere, like in the Southern Ocean that Rich is skirting right now, the ocean may actually have cooled a little. Why? The answer is the wind. What makes the wind blow is the difference in air temperature and pressure between two points. Cold air is denser and results in higher atmospheric pressure, and this high-pressure air wants to flow toward warmer, lower pressure, areas. As the planet's atmosphere warms, these differences in hot and cold are getting bigger. An example is the difference between the Antarctic cold air and the surrounding sub-tropical warm air, and the result is that the winds in the ocean around Antarctica are getting stronger. These stronger winds cool the ocean through evaporation, just like, if you are a little sweaty, you'll feel the wind start chilling you!

That, though, is climate, and what Rich has to worry about is weather---the storms and calms that our changing climate spawns. From a climate perspective, you'd predict that the storms on average have become a little stronger, but that doesn't mean that all storms are more intense. Either way, let's wish Rich and all the other skippers luck to avoid the worst ones!

NEWS EXPLORER

Find a newspaper article that focuses on international cooperation or negotiations. Possible topics include trade, climate, natural resources, space, and endangered species. Write a paragraph describing the scope of the issue. Who are the parties? What are the major points of contention? What are the benefits of cooperation? Was an agreement reached, or is one likely to be reached?