

Research on the Fishing Industry Influenced by Storm

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ABSTRACT

Storm or tornado are catastrophes that negatively affect many types of industries. The fishing industry is greatly affected by storms. The income of an industry is significantly related to the natural disaster. The author uses historical data to summarize some conditions and draw conclusions about the effects of storms on the fishing industry. Besides, this paper analyzes how modern technologies have become more weather tolerant.

Keywords: *Fishing Industry, Storms, modern technologies*

1. INTRODUCTION

Companies make financial decisions based on the weather. Following the weather forecasts, the executives of the firms will be able to control the amount of work they are supposed to do based on the weather report of the next few days. This is how people could utilize weather forecasts to maximize the profits gained from production. By reading the weather reports of the future carefully, the corporations would be able to know what to do and what to prevent. However, there are also some conditions that the weather affects the economy before people can recognize it. The weather forecasts are not always precise, so there are disasters that people wouldn't be able to predict. For example, an unpredicted tornado happens and destroys a farm. This would cause uncountable loss for the farmers. It is clear that extreme weather condition would affect various types of economy.

Recently, experts have found that extreme weathers have great effects on the production of the fishing industry. On one hand, the rising temperature, as a part of climate change, could cause changes to the physical attributes of the oceans, like changing oceans' salinity and oxygen content, raise the sea levels or make differences in the ocean currents. In this way, effects would be imposed on the distributions and sizes of fish stocks. On the other hand, the storm is also a significant climate factor that would make differences in the production of the fishing industry. As one of the main extreme weathers, the effect that the storm has on the production of the fishing industry is quite large. In the following part of the passage, the analysis of data from 2000 to 2011 about the storms that happened in America

will be included, and then compare with the data of the production of the fishing industry.

2. DATA OF STORMS

Using data of storms, we can see the frequency of the happening of storms in a year. Those facts would also be included in the storm data from 2000 to 2011.

2.1. Data for 2000-2002

The total number of tornados is 1076, and the number of days with tornados is 212, 58.8% out of the year. This means that 1076 happened in the 212 days, 5.08 per day. Please imagine that the storm happens in over half of the year, with storms in a day on average. For people's lives during that period, this must be a quite hard time. The 2000 storm exceeds the average number of tornados per year from 1916 to 2000. The days that tornado occurs is also above the average until that year.

The tornado data of 2001 is 1213 times of tornado happened 174 days. Compared with the year 2000, the amount of tornado increases but the days of tornado weather decreases. This means that the tornado happened more frequently in that year. On average, this year, tornado happens in 47.67% of the days, and 6.97 tornados happen each day.

In 2002, 934 tornados happened in 170 days. The number of storms that happened is the smallest compared to the past 11 years. However, the total deaths (55) in this year is more than the deaths in 2000 and 2001 (40 and 41). The frequency of tornado is 5.49 times in one day, and the possibility of tornado is 47.2%. [1]

2.2. Data for 2003-2005

There were 1372 tornados within 163 days. The storm of this year is more than any of the three years above, while the days with tornados happened is less than any one of the three above years. It is quite considerable that the number of storms of category 7 and more is larger than the other three years, which is the cause of the frequent happening of storms this year. The days with storms account for 44.7% of the year, and on average 8.41 storms happen within a day.

Then comes the data of 2004. It is a huge shock when I first see the storm data of 2004 because the occurrence of storm is really prevalent. There were 1819 tornados happened in 190 days. The number of storms and the days with storms was more than the above years, even much more than the storms of each year from 1916 until 2004. But it is good news that most of the storms of this year are not serious. As a result, 52.1% of days in the year have storms. Plus, 9.57 tornados happen each day. This is also a large number.

In 2005, 1194 tornados happen in 181 days, 49.6% of days have storms and the frequency of tornados is 6.60 times a day. There aren't any special conditions this year. The only thing that could be concluded is that the total deaths of the years remain low, and almost every year I studied about has total deaths lower than the average total deaths since 1920. [2]

This might be a sign of people's advance in technologies of rescuing lives, or prevent more people from being hurt by natural disasters.

2.3. Data for 2006-2008

There were 1119 storms during 176 days in 2006. On average, 48.2% of days has at least one storm, and 6.35 times of storms of one day. That data is quite common: not too much higher than the others and not too much lower than the other yearly data. Due to the fact that more higher-level storm happens than lower-level storms, the total death turns out to be more than the data of the other years.

In 2007, 1096 tornados happen in 176 days, the same amount as the last year. That means on average, 6.23 storms happen in a day, with 48.2% of stormy days in a year. It is a considerable fact that the total death increases a lot- 81 people died in the storms of this year. It is quite close to the average yearly death (82).

Then comes 2008. Within the year, there are totally 1698 storms. And storm occurs in 169 days. The happening of tornados becomes prevalent again. By calculation, 10.0 storms occur each day, and 46.3% of days of the year have a storm. The total amount of death is 126 people-a shattering data. The total death is even above the average. Through the research, we can see that there are many small-scaled storms. [3]

2.4. Data for 2009-2011

In 2009, 1155 storms happen in 168 days. This shows us that 46.0% of days have storms, with 6.88 storms every day. The storm data is normal, but the amount of deaths is shattering. 210 people died because of serious storms, and the highest death in a single tornado is 80. That is unimaginable-80 people die in only one storm! But luckily, the economy was not affected so much.

The amount of storm happened in 2010 is 1287, within 160 days. This means 43.8% of the year has storms, and 8.04 storms happen in a day. The data for this year is similar to the average.

Then, the tornado data of 2011 is that 1640 storms happened in 175 days with 553 deaths. Within a day, 9.37 storms happened; and 48.0% of days happen to have storms occurred. From my own perspective, the data is frightening: more storms happened in more days, with quite a lot of people died. The amount of death is large, and ridiculous. Furthermore, 158 people died in one single storm. [4]

3. FREQUENCY OF THE AVERAGE NUMBER OF STORMS HAPPENED IN A DAY OF EACH YEAR

Table 1. Frequency of the average number of storms happened in a day of each year [5]

| Year | Frequency | Year | Frequency |
|------|--------------------|------|--------------------|
| 2000 | 5.08 times per day | 2006 | 6.35 times per day |
| 2001 | 6.97 times per day | 2007 | 6.23 times per day |
| 2002 | 5.49 times per day | 2008 | 10.0 times per day |
| 2003 | 8.41 times per day | 2009 | 6.88 times per day |
| 2004 | 9.57 times per day | 2010 | 8.04 times per day |
| 2005 | 6.60 times per day | 2011 | 9.37 times per day |

The table shows that the data for tornados of a decade. It does not have any specific regular pattern.

4. DATA OF GLOBAL FISHING INDUSTRY

The graph of the global fishing industry tells us that production has been increasing. The graph shows us that the total production from 2002 to 2018. The production of 2002, which is about 127.8 million metric tons, turned to be 178.8 million metric tons. That increase within 16 years is quite significant. The graphs show the global fish production from 2002 to 2018.

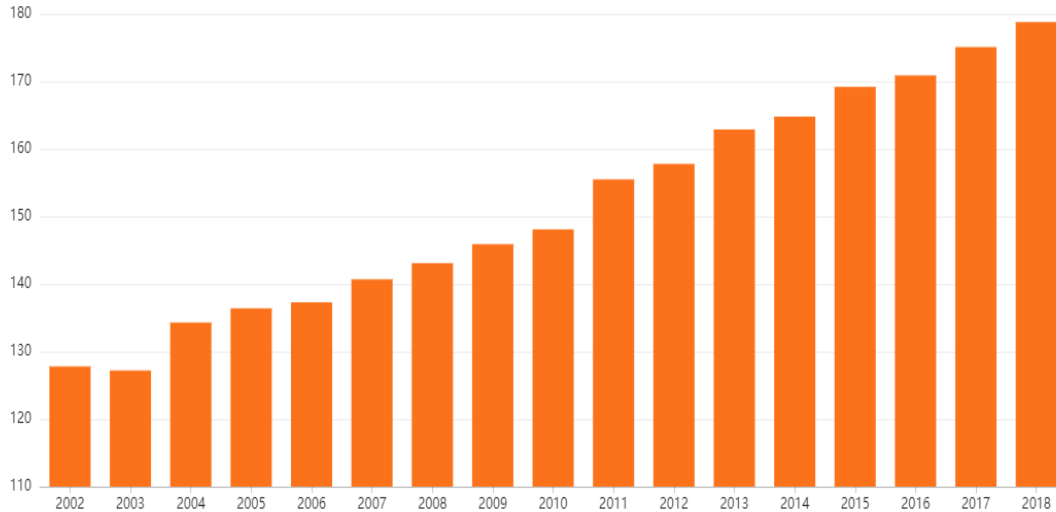


Figure 1 Global fish production from 2002 to 2018[6]

5. SUGGESTION

5.1. The Investigation towards the Factors that Affects the Fishery of Economics

This is the key method that how Americans deal with the problem. Without the investigation, Americans might never know what causes their fishery income to be lower. People in the United States kept on the study of the cause, and they finally found out about the weather’s effect on the fishery economy.

5.2. The Study of the Causes that Worsens the Ecology

This is the factor former than the management of a sustainable pattern of management. Ecology is essential for the oceanic fishery-without a good environment, the fishery groups won’t be able to catch enough fishes.

5.3. The Construction of An Effective and Sustainable Fishery Management Pattern

The government of the United States follows the ecological system to manage the fishery of the nation. What they realized is a “harmony between human and ocean”. If people keep this concept in mind, they won’t lose their benefit in fishery caused by the affective weather. If people are able to gain fishery benefits considering the fishes’ actual activities, they could easily maximize the income-just like Americans are doing.

5.4. The Strengthening of International Cooperation

By contacting the companies around the world, the fishery groups will be able to get global fishing information more easily. On the other hand, the fishery groups will also be able to share their information with foreign fishery groups. By cooperating with the other countries, it would be easier for them to get over the problems caused by the weather like storms.

5.5. Technologies

Climate-smart agriculture (CSA) is an approach that helps to guide actions needed to transform and reorient agricultural systems to effectively support the development and ensure food security in a changing climate. CSA aims to tackle three main objectives: sustainably increasing agricultural productivity and incomes; adapting and building resilience to climate change; and reducing or removing greenhouse gas emissions, where possible.[7] Besides, the fishery groups of the US have advanced fishing boats that are able to keep the economics from being seriously affected by the storms.

6. CONCLUSION

The production of the fishing industry increases as the storm is not prevalent, and the production is low when the storm is fierce. But the fact could not be concluded that easily. The first graph shows us that production keeps

increasing. The technology's effect on production is significant-in the past, the fishing industry might be seriously affected, but the modern fishing industry is not that seriously affected.

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REFERENCES

- [1] National Centers for Environmental information (NOAA Storm Data),
<https://www.ncdc.noaa.gov/IPS/sd/sd.html#DESCRIPTION>, 2002
- [2] National Centers for Environmental information (NOAA Storm Data),
<https://www.ncdc.noaa.gov/IPS/sd/sd.html#DESCRIPTION>, 2005
- [3] National Centers for Environmental information (NOAA Storm Data),
<https://www.ncdc.noaa.gov/IPS/sd/sd.html#DESCRIPTION>, 2008
- National Centers for Environmental information (NOAA Storm Data),
<https://www.ncdc.noaa.gov/IPS/sd/sd.html#DESCRIPTION>, 2011
- [4] National Centers for Environmental information (NOAA Storm Data),
<https://www.ncdc.noaa.gov/IPS/sd/sd.html#DESCRIPTION>, 2000-2011
- [5] Global fish production 2006-2018, data.iimedia.cn,
<https://data.iimedia.cn/page-category.jsp?nodeid=13634102>
- [6] Climate-Smart Agriculture. Food and Agriculture Organization of the United Nations. 2020.
<http://www.fao.org/climate-smart-agriculture/en/>