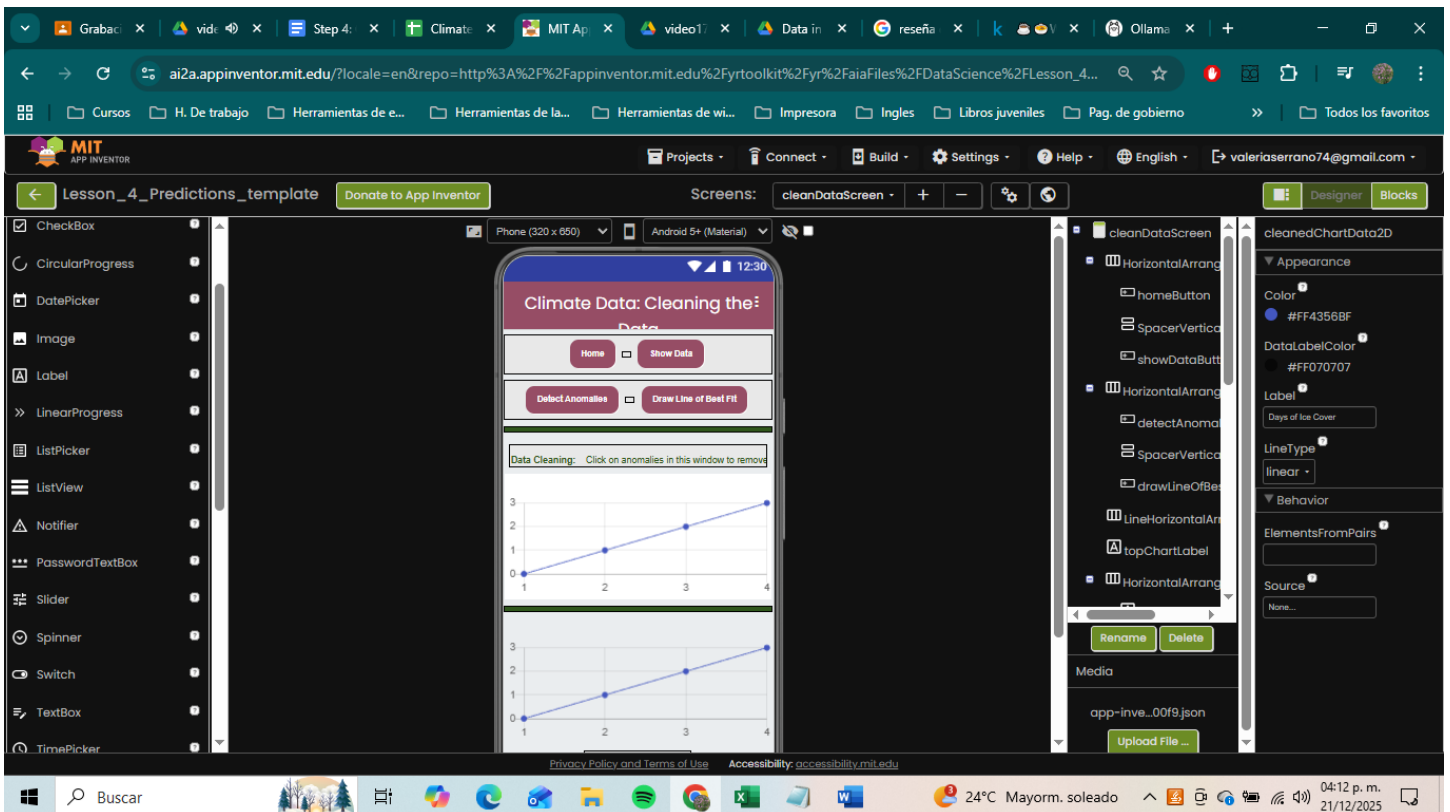
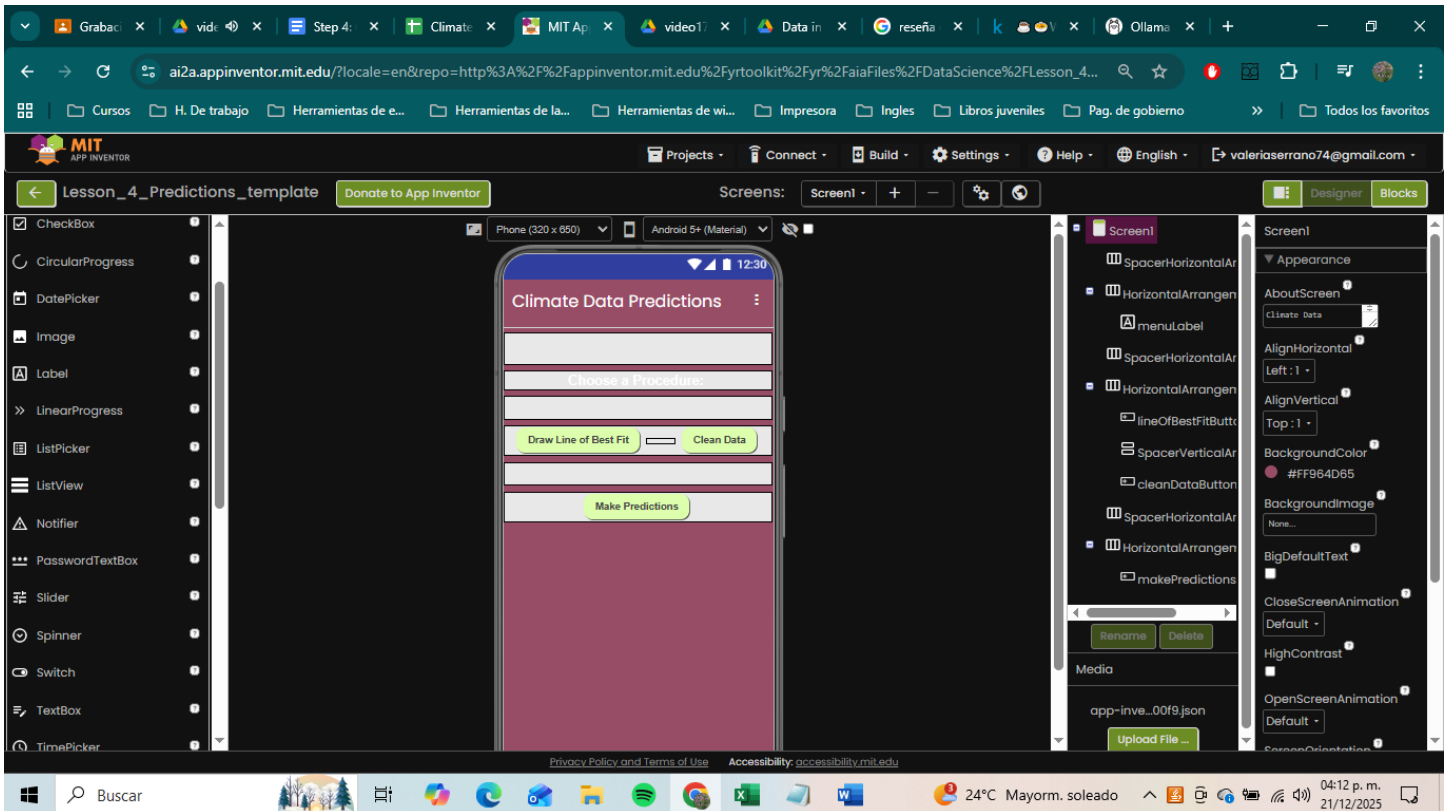


Nombre del alumno: Lisset Serrano Aguilar

Entrega de proyecto final: Climate Data: Lake Ice Data with Real Gaps

Interfaz de diseño:



MIT APP INVENTOR

Lesson\_4\_Predictions\_template

Screens: drawLOBScreen

Phone (320 x 650) Android 5+ (Material)

Climate Data: Create a Model

Home Show Data Draw Line of Best Fit

Days of Ice Cover

M = B = R =

Temperature (c)

bottomChartData2D

Appearance

Color Red

DataLabelColor #FF0707

Label Temperature (c)

LineType linear

Behavior

ElementsFromPairs

Source

None

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MIT APP INVENTOR

Lesson\_4\_Predictions\_template

Screens: makePredictionsScreen

Phone (320 x 650) Android 5+ (Material)

Climate Data: Making Predictions

Home Show Data

Detect Anomalies Draw LOBF AI Analysis

Data Cleaning: Click on anomalies in this window to remove.

ChatBot!

Behavior

ApiKey 2330acta03584199879c98

Model Default

Provider ollama

System

Advanced

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## Programación en bloques:

### Screen 1

MIT APP INVENTOR

Lesson\_4\_Predictions\_template

Screens: Screen1 + -

Designer Blocks

when lineOfBestFitButton . Click  
do open another screen screenName drawLOBFScreen

when cleanDataButton . Click  
do open another screen screenName cleanDataScreen

when makePredictionsButton . Click  
do open another screen screenName makePredictionsScreen

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### Clean Data Screen

MIT APP INVENTOR

Lesson\_4\_Predictions\_template

Screens: cleanDataScreen + -

Designer Blocks

when homeButton . Click  
do open another screen screenName Screen1

when showDataButton . Click  
do call dataCleaningCharData20 . Clear  
call spreadsheet . ReadSheet  
sheetName Spirit Lake

when spreadsheet1 . GotSheetData  
sheetData  
do set topCharLabel . Text to Spirit Lake, Orleans, Iowa  
call dataCleaningCharData20 . ImportFromSpreadsheet  
spreadsheet spreadsheet1  
xColumn Year  
yColumn Ice  
useHeaders true  
call dataCleaningCharData20 . ImportFromSpreadsheet  
spreadsheet spreadsheet1  
xColumn Year  
yColumn Ice  
useHeaders true

when drawLineOfBestFitButton . Click  
do set Trendline1 . ChartData to cleanedCharData20

when detectAnomaliesButton . Click  
do call dataCleaningCharData20 . HighlightDataPoints  
dataPoints  
call AnomalyDetection1 . DetectedAnomaliesInChartData  
chartData dataCleaningCharData20  
threshold 2  
color red

when dataCleaningCharData20 . EntryClick  
do if is in list? thing  
make a list get X  
get Y  
list call AnomalyDetection1 . DetectedAnomaliesInChartData  
chartData dataCleaningCharData20  
threshold 2  
then call dataCleaningCharData20 . RemoveEntry  
x get X  
y get Y  
call cleanedCharData20 . Clear  
call cleanedCharData20 . ImportFromList  
list call dataCleaningCharData20 . GetAllEntries

when Trendline1 . Updated  
results  
do set topSlopeValueLabel . Text to Trendline1 . LinearCoefficient  
set topY\_intValueLabel . Text to Trendline1 . Yintercept  
set topCor\_coefValueLabel . Text to Trendline1 . CorrelationCoefficient

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## DrawLOBFscreen

The screenshot shows the MIT App Inventor web interface. The browser address bar displays the URL: `ai2a.appinventor.mit.edu/?locale=en&repo=http%3A%2F%2Fappinventor.mit.edu%2Fyrtoolkit%2Fyr%2FaiaFiles%2FDataScience%2FLesson_4...`. The page title is "Lesson\_4\_Predictions\_template". The "Screens" list shows "drawLOBFscreen" selected. The "Designer" tab is active. The logic bricks for the "drawLOBFscreen" screen are as follows:

- when homeButton.Click**
  - do open another screen screenName Screen1
- when showDataButton.Click**
  - do call topChartData2D.Clear
  - do call bottomChartData2D.Clear
  - do call spreadsheet1.ReadSheet sheetName Spirit Lake
- when spreadsheet1.GotSheetData**
  - do set topChartLabel.Text to Spirit Lake, Orleans, Iowa
  - do call topChartData2D.ImportFromSpreadsheet
    - spreadsheet spreadsheet1
    - xColumn Year
    - yColumn Ice
    - useHeaders true
  - do call bottomChartData2D.ImportFromSpreadsheet
    - spreadsheet spreadsheet1
    - xColumn Year
    - yColumn Temp
    - useHeaders true
- when drawLineOfBestFitButton.Click**
  - do set topTrendline.ChartData to topChartData2D
  - do set bottomTrendline.ChartData to bottomChartData2D
  - do set topSlopeValueLabel.Text to topTrendline.LinearCoefficient
  - do set topY\_intValueLabel.Text to topTrendline.YIntercept
  - do set topCor\_coefValueLabel.Text to topTrendline.CorrelationCoefficient
  - do set bottomSlopeValueLabel.Text to bottomTrendline.LinearCoefficient
  - do set bottomY\_intValueLabel.Text to bottomTrendline.YIntercept
  - do set bottomCor\_coefValueLabel.Text to bottomTrendline.CorrelationCoefficient

## MakePredictionsScreen

The screenshot shows the MIT App Inventor web interface. The browser address bar displays the URL: `ai2a.appinventor.mit.edu/?locale=en&repo=http%3A%2F%2Fappinventor.mit.edu%2Fyrtoolkit%2Fyr%2FaiaFiles%2FDataScience%2FLesson_4...`. The page title is "Lesson\_4\_Predictions\_template". The "Screens" list shows "makePredictionsScreen" selected. The "Designer" tab is active. The logic bricks for the "makePredictionsScreen" screen are as follows:

- when homeButton.Click**
  - do open another screen screenName Screen1
- when showDataButton.Click**
  - do call cleanedChartData2D.Clear
  - do call dataCleaningChartData2D.Clear
  - do call spreadsheet1.ReadSheet sheetName Spirit Lake
- when spreadsheet1.GotSheetData**
  - do set topChartLabel.Text to Spirit Lake, Orleans, Iowa
  - do call cleanedChartData2D.ImportFromSpreadsheet
    - spreadsheet spreadsheet1
    - xColumn Year
    - yColumn Ice
    - useHeaders true
  - do call dataCleaningChartData2D.ImportFromSpreadsheet
    - spreadsheet spreadsheet1
    - xColumn Year
    - yColumn Ice
    - useHeaders true
- when drawLineOfBestFitButton.Click**
  - do set topTrendline.ChartData to topChartData2D
  - do set bottomTrendline.ChartData to bottomChartData2D
  - do set topSlopeValueLabel.Text to topTrendline.LinearCoefficient
  - do set topY\_intValueLabel.Text to topTrendline.YIntercept
  - do set topCor\_coefValueLabel.Text to topTrendline.CorrelationCoefficient
  - do set bottomSlopeValueLabel.Text to bottomTrendline.LinearCoefficient
  - do set bottomY\_intValueLabel.Text to bottomTrendline.YIntercept
  - do set bottomCor\_coefValueLabel.Text to bottomTrendline.CorrelationCoefficient

MIT APP INVENTOR

Lesson\_4\_Predictions\_template

Screens: makePredictionsScreen

Designer

when drawLineOfBestFitButton Click

do

set Trendline1 ChartData to cleanedChartData2D

when Trendline1 Updated

results

do

set SlopeValueLabel Text to Trendline1 LinearCoefficient

set Y\_intValueLabel Text to round Trendline1 Yintercept

set Cor\_coefValueLabel Text to Trendline1 CorrelationCoefficient

set X\_intValueLabel Text to round Trendline1 XIntercepts

call cleanedDataChart ExtendDomainToInclude x Trendline1 XIntercepts

when detectAnomaliesButton Click

do

call dataCleaningChartData2D HighlightDataPoints

dataPoints call AnomalyDetection1 DetectAnomaliesInChartData

chartData dataCleaningChartData2D

threshold 2

color red

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MIT APP INVENTOR

Lesson\_4\_Predictions\_template

Screens: makePredictionsScreen

Designer

when dataCleaningChartData2D EntryClick

x y

do

call dataCleaningChartData2D RemoveEntry

x get x

y get y

call cleanedChartData2D Clear

call cleanedChartData2D ImportFromList list call dataCleaningChartData2D GetAllEntries

when AIAnalysisButton Click

do

set dataCleaningChart Visible to false

set dataCleaningHorizontalArrangement Visible to false

set AIResponseHorizontalArrangement Visible to true

call ChatBot1 Converse

question join

Dado los siguientes datos para el numero anual

Numero de dias que el lago de agua dulce estuvo

call cleanedChartData2D GetAllEntries

El coeficiente de correlacion para la linea de m

Trendline1 CorrelationCoefficient

La pendiente de mejor ajuste es

Trendline1 LinearCoefficient

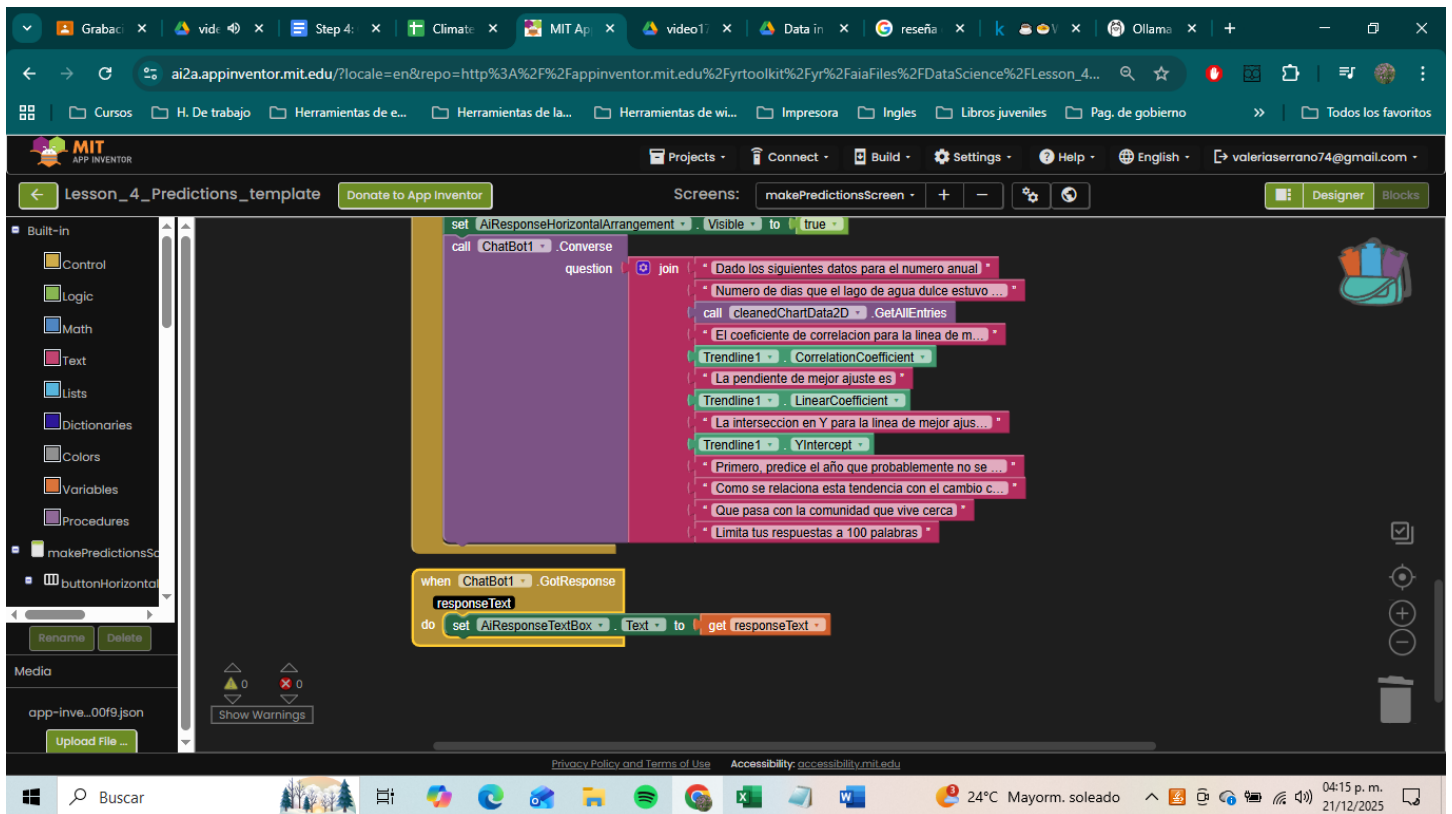
La interseccion en Y para la linea de mejor ajus

Trendline1 Yintercept

Primero, predice el año que probablemente no se

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Implementación en el teléfono:



## Climate Data Predictions

## Climate Data: Create a Model

## Choose a Procedure:

Draw Line of Best Fit

Clean Data

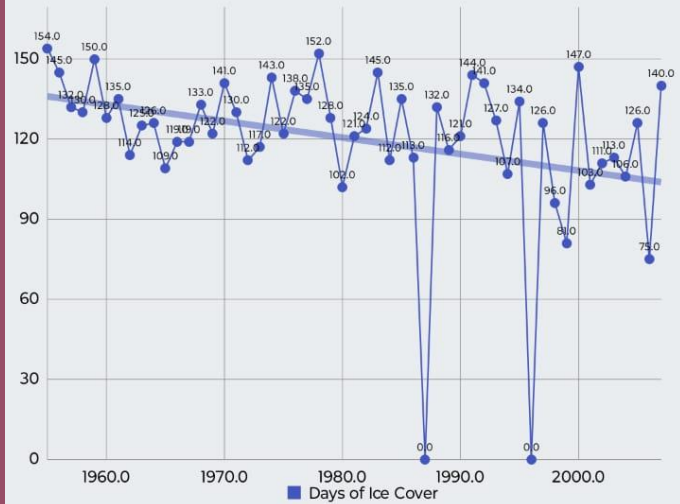
Make Predictions

Home

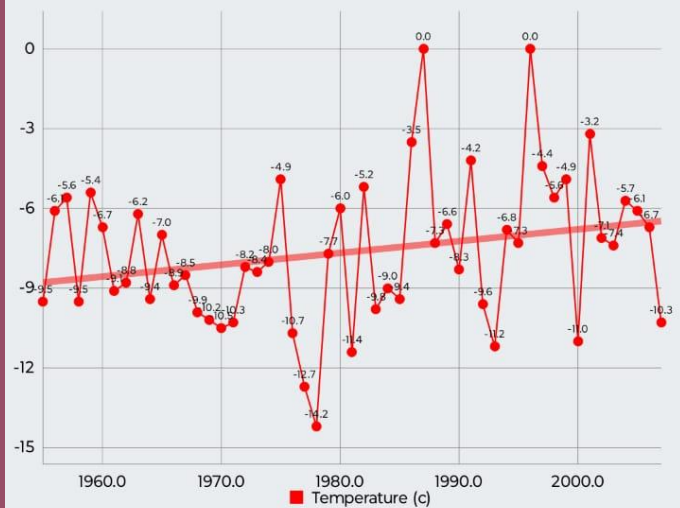
Show Data

Draw Line of Best Fit

## Spirit Lake, Orleans, Iowa



$$M = -0.6178 \quad B = 1343.81229 \quad R = -0.3279$$



$$M = 0.04448 \quad B = -95.7545 \quad R = 0.245$$

## Climate Data: Cleaning the Data

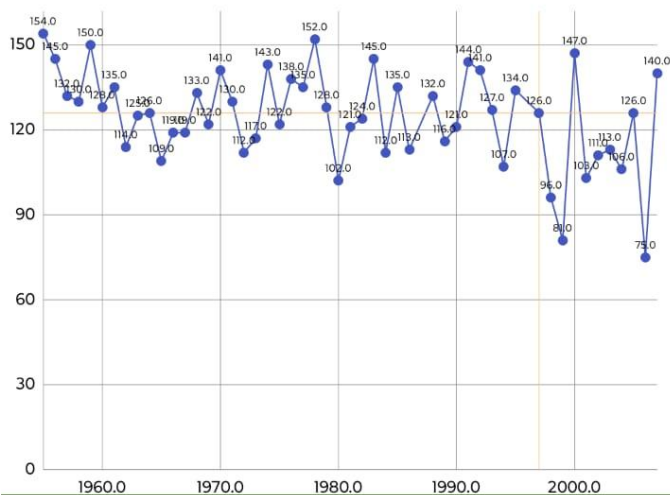


## Climate Data: Cleaning the Data

[Home](#)[Show Data](#)[Detect Anomalies](#)[Draw Line of Best Fit](#)[Home](#)[Show Data](#)[Detect Anomalies](#)[Draw Line of Best Fit](#)

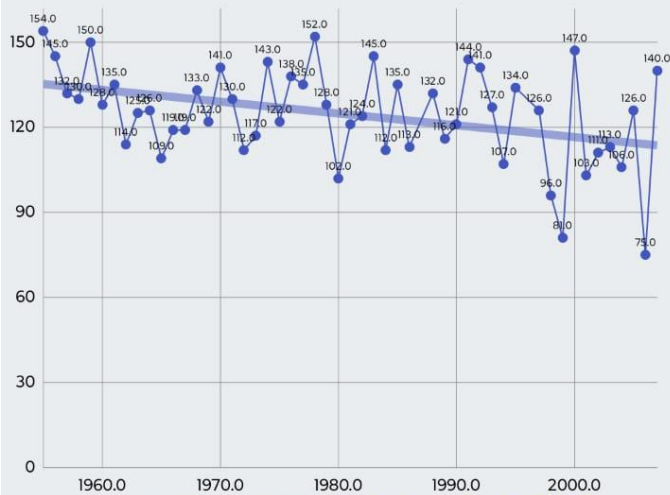
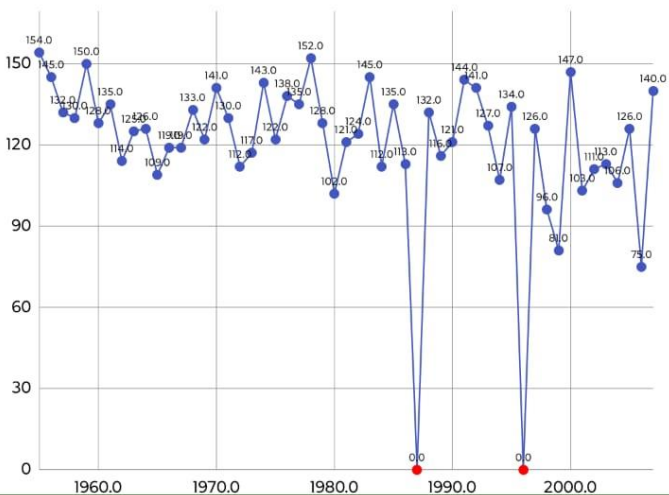
## Spirit Lake, Orleans, Iowa

Data Cleaning: Click on anomalies in this window to remove.

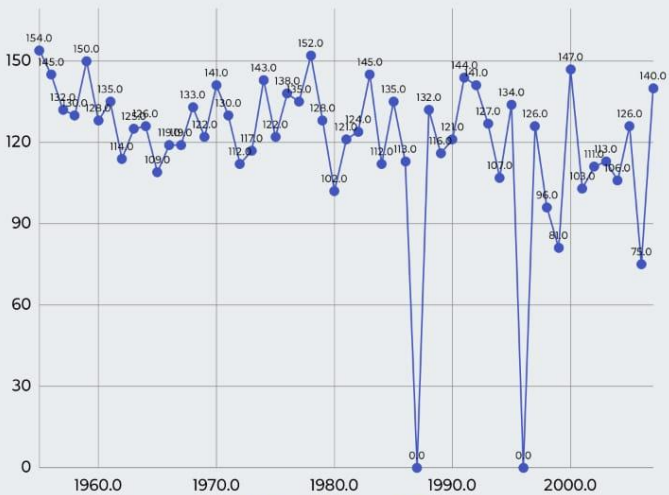


## Spirit Lake, Orleans, Iowa

Data Cleaning: Click on anomalies in this window to remove.



M = -0.41578 B = 948.13964 R = -0.38536



M = B = R =



## Climate Data: Making Predictions



## Climate Data: Making Predictions



Home

Show Data

Detect Anomalies

Draw LOBF

AI Analysis

Home

Show Data

Detect Anomalies

Draw LOBF

AI Analysis

## Spirit Lake, Orleans, Iowa

Basándonos en los datos, el lago probablemente no se congele en el futuro. La disminución en el número de días de congelamiento sugiere un calentamiento global.

Este cambio climático afecta negativamente a la comunidad local: disminuye los recursos hídricos para pesca y agricultura, altera ecosistemas, aumenta riesgos de inundaciones y erosiones.

## Spirit Lake, Orleans, Iowa

Basado en la pendiente y la intersección de la línea de mejor ajuste, predecimos que el lago podría no congelarse alrededor del año 2035-2040.

Esta tendencia negativa se relaciona con el cambio climático ya que el aumento de las temperaturas globales provoca que los lagos se congelen por períodos más cortos. La comunidad que vive cerca podría experimentar impactos como la reducción de recursos hídricos, alteraciones en la vida silvestre y riesgos para la infraestructura.

