

Reading  
Day

# Analyze a Technical Article

Earth Science – Topic 25  
Volcanoes and Climate

# “Day 2” Reading Day Objectives

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## **From this lesson, you should be able to:**

- Explain the layout/format of the article
- Point-to/identify important key words
- Cross-reference difficult words with Matrix 2
- Explain the pre-requisite words
- Generally describe new concepts
- Select a sub-topic for your presentation



# Instructions

Launch web page at: Activity 11, Earth, Topic 25

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1. Thoroughly scan the student guide
2. Confirm your grasp of prerequisite concepts
3. Explore key terms for initial understanding
4. Read the article's conclusion (*pg. 10*)
  - Note El Chichón erupted April 1982
  - Note Mount Pinatubo erupted June 1991
  - Examine the 4<sup>th</sup> paragraph – compare text to Matrix 1
5. Completely read the abstract (*pg. 1*)
  - Consider using “expression replacement” from Matrix 2
6. Gain instructor approval of a sub-topic for your presentation



# Helpful Ways to Understand the Abstract

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## Matrix 1

	El Chichón	Mount Pinatubo
Tropospheric	cooling	weak cooling
Stratospheric	warming	warming



# Helpful Ways to Understand the Abstract

## Matrix 2

**When the abstract says ...**

**You can replace the words with this ...**

responses

changes

linear regression

mathematics

seasonal harmonics

natural causes

QuasiBiennial Oscillation

natural causes

solar cycle

natural causes

El Niño Southern Oscillation.

natural causes

reanalysis data

climate data

signals

changes

lower stratosphere

about 25 km or 15 miles up there

subtropical upper troposphere

about 8 km or 5 miles up there

asymmetric

two sides that are different

measure of the confidence

certainty of being correct

intercomparison

comparisons of different things



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# Prerequisite Concepts

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## Longitude & Latitude

A coordinate system allowing the location of any place on Earth's surface to be determined and described.

## Scatter Diagrams

A scatter diagram graphs pairs of numerical data, with one variable on each axis. These assist in the identification of a relationship between pairs.

## Degrees Kelvin

The Kelvin is the base unit of temperature in the International System of Units (SI), having the unit symbol K.

## Stratosphere

The stratosphere is a layer of Earth's atmosphere. It is the second layer of the atmosphere as you go upward. The troposphere, the lowest layer, is right below the stratosphere. The next higher layer above the stratosphere is the mesosphere.



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# Key Terms

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## Volcanic Aerosols

Volcanic eruptions can inject sulfate aerosols into the lower stratosphere. Sulfates are compounds related to sulfuric acid,  $\text{H}_2\text{SO}_4$ .

## hPa and Altitude

hPa is the abbreviated name for hectopascal (100 x 1 pascal) pressure units which are exactly equal to millibar pressure unit (mb or mbar)

## Regression Analysis

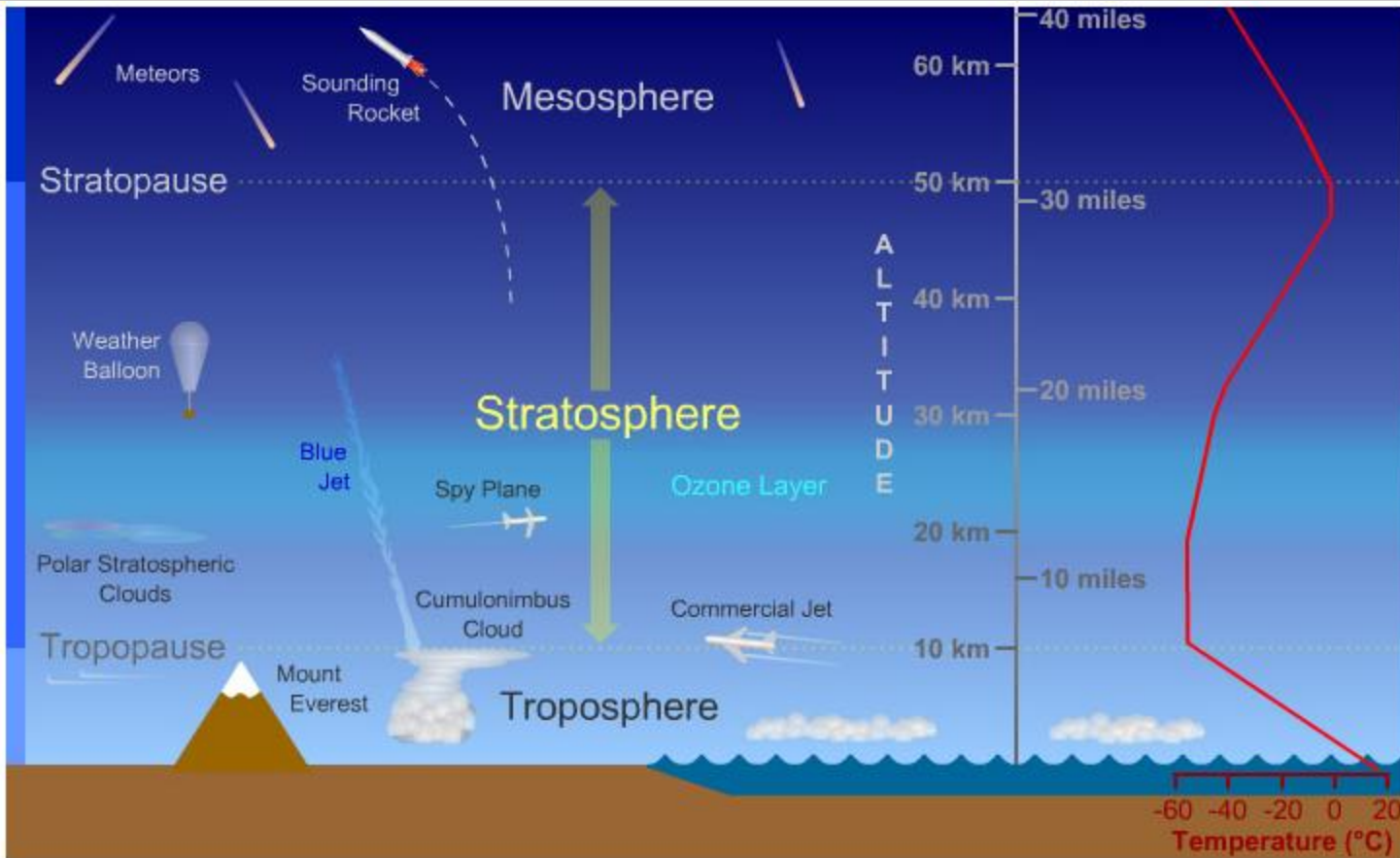
Regression analysis, in statistical modeling, is a way of mathematically sorting out a series of variables.

## Residual following Regression Analysis

A residual is the difference between the measured value and the predicted value of a regression model.



# Stratosphere (10-50 km)



The stratosphere is the second layer (going upward) of Earth's atmosphere. It is above the troposphere and below the mesosphere. The ozone layer is within the stratosphere. The temperature gets warmer as you go higher in the stratosphere. Credit: Randy Russell, UCAR

<https://scied.ucar.edu/shortcontent/stratosphere-overview>

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# Presentation Design and Development

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- Include at least two of the “7 diagrams”
- Use large font to be visible to a group
- Include the actual reference
- DO NOT put “Google” as a reference
- DO NOT cut/paste text
- DO NOT plagiarize

