

# CASE TEACHING NOTES

for  
“Into the Abyss: The Case of the Collapsing Sinkhole”

by  
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## INTRODUCTION / BACKGROUND

This case is featured in two parts. In the first part, students review data from a scientific study in the Orlando, Florida, area and are asked to infer a relationship between groundwater levels and sinkhole formation in a karst terrane. In the second part, students apply this principle to a case involving sinkhole collapse allegedly caused by a mining company.

This case is intended for small groups (of five or six students) that can work independently outside of the classroom. (Note that students are required to access several web sites as part of the assignment.) Each group submits their answers to me prior to discussing the case in a large group setting. My approach to grading is to simply give credit for any answers that demonstrate careful thought, that is, I am not looking for “right” answers.

I wrote this case for a freshman-level environmental geology class that averages 100 students per semester. Because this case was written for a non-majors, introductory-level class, it does not presume a great deal of background in geology. However, students should have had some exposure to the concepts of groundwater occurrence, karst terrance and sinkhole formation before they are presented with the case. Consequently, it is not appropriate for use at the beginning of an introductory-level course. Instructors adapting this case for more advanced courses might find it a good ice breaker activity for the first week of class.

### *Objectives*

- To use active group learning within a science course.
- To expose students to the process of hypothesis formulation and testing.
- To teach students a principle that applies to sinkhole formation.
- To illustrate how an understanding of geologic processes is relevant in the real world.

## CLASSROOM MANAGEMENT / MAJOR ISSUES

This case is designed to be an independent assignment that follows a lecture period during which I present some background information on sinkholes. The goal of the lecture is to give students a description of sinkholes and a basic understanding of how they form without explaining what I want them to learn from doing the sinkhole exercise.

Students are assigned randomly to small groups at the beginning of the course and remain in those groups throughout the semester. Group work takes place both inside and outside of the classroom. In the case of the sinkhole assignment, I give the groups a four-day period in which to complete their work and submit a copy of their answers to me (by e-mail, although I also accept paper copies). We discuss their answers as a large group during the following class period.

Some instructors might like to give their students a follow-up assignment that would allow them to test their hypotheses of why sinkholes form preferentially during the spring near Orlando. One source of information that would shed light on this matter is the Florida Climate Center web site

([http://www.coaps.fsu.edu/climate\\_center/](http://www.coaps.fsu.edu/climate_center/)), which provides average monthly rainfall data for various weather stations in Florida (select “Normals” under “Climate Data” in the left-hand frame). For additional information, the average monthly rainfall data for the Orlando Airport is plotted in Figure 3 below.

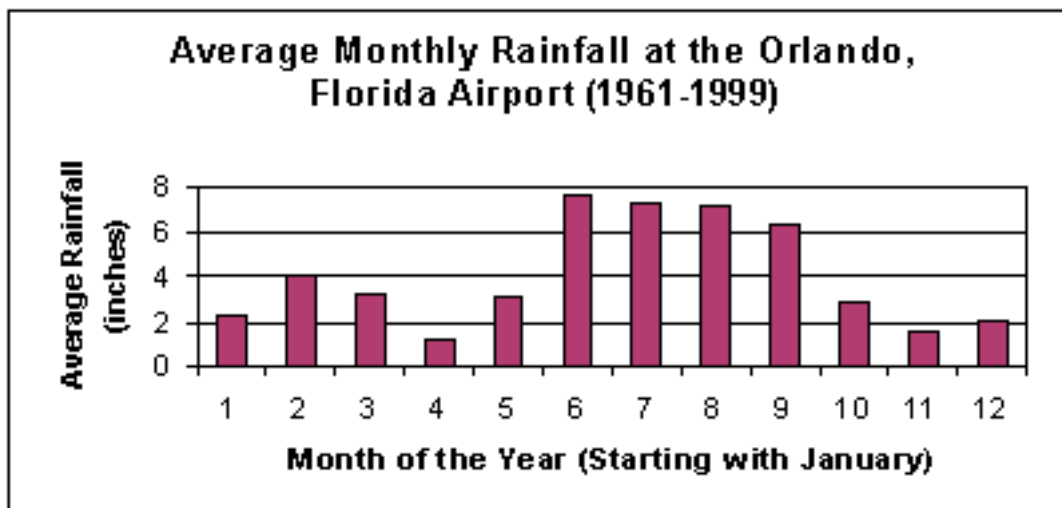


Figure 3

## ANSWER KEY

Answers to the questions posed in the case study are provided in a separate answer key to the case. Those answers are password-protected. To access the answers for this case, go to [the key](#). You will be prompted for a username and password. If you have not yet registered with us, you can see whether you are eligible for an account by reviewing our [password policy and then apply online](#) or write to [answerkey@sciencecases.org](mailto:answerkey@sciencecases.org).

## REFERENCES

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