

Program-Level Assessment: Annual Report

Program Name (no acronyms): Meteorology Department: Earth and Atmospheric Sciences

Degree or Certificate Level: BS College/School: College of Arts and Sciences

Date (Month/Year): 09/2021 Assessment Contact: Charles Graves

In what year was the data upon which this report is based collected? Academic Year 2020/2021

In what year was the program's assessment plan most recently reviewed/updated? 2020

1. Student Learning Outcomes

Which of the program's student learning outcomes were assessed in this annual assessment cycle? (Please list the full, complete learning outcome statements and not just numbers, e.g., Outcomes 1 and 2.)

2. Students will be able to analyze and interpret observational data and numerical model output.

3. Assessment Methods: Artifacts of Student Learning

Which artifacts of student learning were used to determine if students achieved the outcome(s)? Please describe and identify the course(s) in which these artifacts were collected. Clarify if any such courses were offered a) online, b) at the Madrid campus, or c) at any other off-campus location.

One set of data was taken from the course EAS 1700 Weather Briefing. The student scores associated with the weather presentation rubric that evaluated the students' ability to correctly identify observed atmospheric fields and features. This was a freshmen course. Another set of data was taken from EAS 4220 Synoptic Meteorology II. The student scores associated with forecast discussions that evaluated the students' ability to correctly identify and interpret both observations and numerical model output.

4. Assessment Methods: Evaluation Process

What process was used to evaluate the artifacts of student learning, and by whom? Please identify the tools(s) (e.g., a rubric) used in the process and **include them in/with this report document** (do not just refer to the assessment plan).

The scores from the rubric were collected for each student that presented. In the rubric from course EAS 1700, the scores (1-4) from rows 2 and 4 were collected. In the rubric from course EAS 4220, the scores (1-10) from rows X were collected. The data was provided by the instructor and both rubrics are attached to this report.

5. Data/Results

What were the results of the assessment of the learning outcome(s)? Please be specific. Does achievement differ by teaching modality (e.g., online vs. face-to-face) or on-ground location (e.g., STL campus, Madrid campus, other off-campus site)?

EAS 1700 had 7 majors and a total of 41 scores were recorded. The summary of the results is:

Rarely		Occasionally		Often		Always	
Count	%	Count	%	Count	%	Count	%

Does the student correct specify atmospheric fields?	0	0	0	0	7	17.07	34	82.93
Does the student use proper physical reasoning when explaining observations and model output?	0	0	0	0	17	41.46	24	58.54

EAS 4220 had 4 majors and a total of 44 scores were recorded. The summary of the results is:

	Rarely		Occasionally		Often		Always	
	Count	%	Count	%	Count	%	Count	%
Does the student correct specify atmospheric fields?	0	0	2	4.54545	18	40.91	24	54.55
Does the student use proper physical reasoning when explaining observations and model output?	0	0	2	4.54545	21	47.73	21	47.73

6. Findings: Interpretations & Conclusions

What have you learned from these results? What does the data tell you?

Items noted:

- The expectations of the freshmen course (EAS 1700) were less than the senior course (EAS 4220). So a direct comparison was not possible. The students in EAS 42200 are expected to analyze and interpret more data, increasing the chances for mistakes.
- In EAS 1700 once the students received feedback from their initial presentations, their presentations improved.
- While the same rubric was used for all forecast discussion in EAS 4220, there were a variety of a guest evaluators from the National Weather Service. Different reviewers, concentrated on different aspect of the students' discussions.
- While the general results suggest students are achieving the learning outcome: Students will be able to analyze and interpret observational data and numerical model output, the number of students involved in this analysis is very small. More data needs to be collected to make more confident conclusions.

7. Closing the Loop: Dissemination and Use of Current Assessment Findings

A. When and how did your program faculty share and discuss these results and findings from this cycle of assessment?

The summary of the results was shared with the meteorology faculty and comments were requested.

B. How specifically have you decided to use these findings to improve teaching and learning in your program? For example, perhaps you've initiated one or more of the following:

Changes to the Curriculum or Pedagogies

- Course content
- Teaching techniques
- Improvements in technology
- Prerequisites

- Course sequence
- New courses
- Deletion of courses
- Changes in frequency or scheduling of course offerings

Changes to the Assessment Plan

- Student learning outcomes
- Artifacts of student learning
- Evaluation process

- Evaluation tools (e.g., rubrics)
- Data collection methods
- Frequency of data collection

Please describe the actions you are taking as a result of these findings.

The rubrics for both courses are being modified to more directly assess the this learning outcome. Scoring will be done by multiple evaluators (i.e., instructors and teaching assistants).

If no changes are being made, please explain why.

8. Closing the Loop: Review of Previous Assessment Findings and Changes

A. What is at least one change your program has implemented in recent years as a result of assessment data?

With the revision of the program in 2020, this is the first assessment of the new program and assessment plan.

B. How has this change/have these changes been assessed?

N/A

C. What were the findings of the assessment?

N/A

D. How do you plan to (continue to) use this information moving forward?

We will continue to monitor this outcome and include data from other courses.

IMPORTANT: Please submit any assessment tools (e.g., rubrics) with this report as separate attachments or copied and pasted into this Word document. Please do not just refer to the assessment plan; the report should serve as a stand-alone document.

EAS 1700 - Weather Briefing Rubric

NAME:

Item	Rarely (1)	Sometimes (2)	Often (3)	Always (4)
Correctly identify fields				
Correctly associate proper units with fields				
Correctly identifies features in the field				
Identifies all the critical features and their characteristics				
Speaks clearly				

COMMENTS:

EAS 4200/4220 Rubric
Forecast Discussions

NAME:

Category:

ITEM	COMMENTS	SCORE (0-10)
Were the presented fields identified with proper units and terminology?		
What was shown, was it relevant to the discussion and weather?		
Were there other items that should have been included?		
Does the student connect fields and physical processes in the discussion?		
Was the presentation completed within time limits?		
Was the presentation clear?		

Comments: