

Sample Solution

# Eye of the Cyclone

Grades 8-10

sample solution

# Project Information

These learning materials were developed within the project „Columbus Eye – Live Imagery from the ISS in schools“. „Columbus Eye“ is funded by the German Air and Space Center with funds of the Ministry of economy and energy based on decision by the German Bundestag according to the grant number 50JR1307.

The overall project objective consists of the development of comprehensive digital learning materials

for the use in schools. This offer embraces interactive learning tools and working sheets which are accessible via our web portal:

<http://www.columbuseye.uni-bonn.de>



Gefördert durch:



aufgrund eines Beschlusses  
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## Overview

**Grade** 8-10

**Level** ● ● ● ● ●

**Time needed** 1 hour

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### Objectives

Pupils ought to be able to...

- understand the emergence of cyclones,
- understand their physical background (Coriolis force),
- interpret weather maps

### Topics

Tropical Cyclones

Coriolis Force

Weather Maps

Augmented Reality

### Media & Material

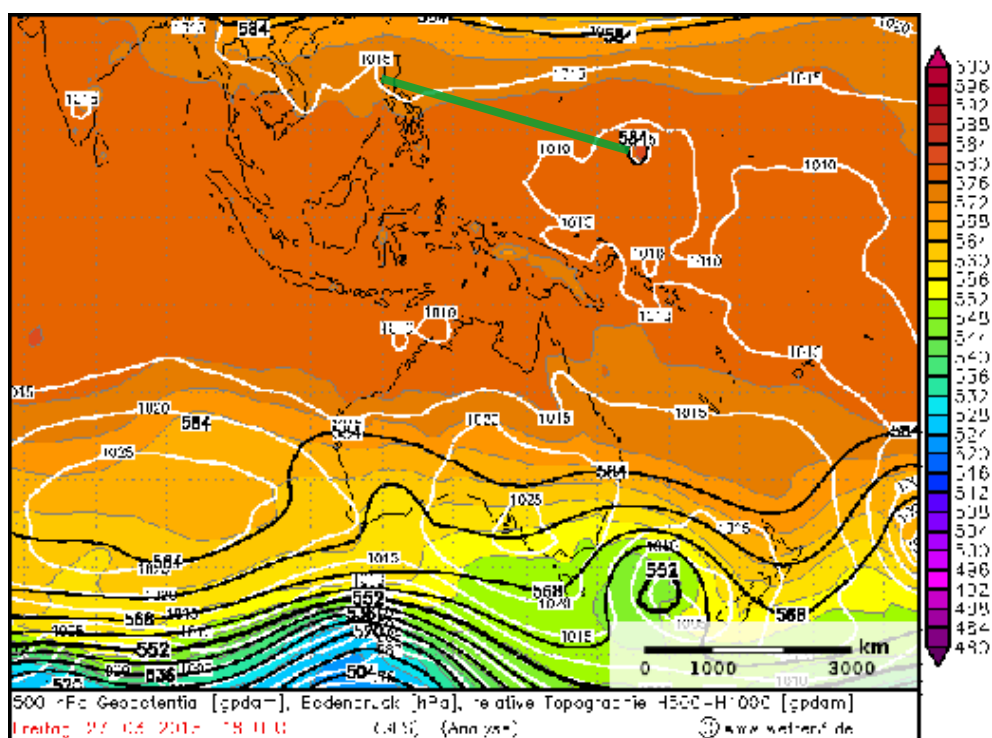
Exercises

Sample solution

App „Eye of Cyclone“

- Exercise 1:** The typhoon is rotating clockwise. The Coriolis force deflects currents on the northern hemisphere to the right and on the southern hemisphere to the left. Thus, low pressure areas rotate leftwards on the northern and rightwards on the southern hemisphere.
- Exercise 2:** Due to high air pressure, air within the eye sinks down. Because of this process, temperature rises.
- Exercise 3:** Saffir-Simpson-Scale.
- Exercise 4:** Water temperature  $\geq 26,5^{\circ}\text{C}$ , a nucleus (tropical low pressure area or thunderstorm-cluster), Coriolis force needs to be strong enough.

**Exercise 5a:**



- Exercise 5b:** Scale of the map  $2,8 \text{ cm} = 3000 \text{ km}$   
 $0.00093 \text{ cm} = 1 \text{ km}$   
 On the map, the cyclone travelled  $3,5 \text{ cm}$   
 Thus  $3,5 / 0,00093 = 3763 \text{ km}$   
 Distance travelled was  $3763 \text{ km}$ .

- Exercise 5c:** First weather map of March 27th, 2015, 18 o'clock  
 last weather map of April 4th, 2015, 18 o'clock.  
 Within 192 hours, the cyclone traveled  $3763 \text{ km}$ .  
 $3763 / 192 = 19,6 \text{ km/h}$   
 Average speed was  $19,6 \text{ km/h}$ .