Layers of the Atmosphere
Grade Band Elementary

Earth and Space Science	**Next Generation Science Standards**
2-ESS2-3	Use a model to represent Earth systems.
3-ESS2-1	Represent typical weather conditions in different parts of the atmosphere.
5-ESS2-1	Develop a model to describe ways the geosphere, biosphere, hydrosphere, and atmosphere interact.
Engineering Design	
K-2 3-5-ETS1-1	Define a design problem (how to build a motor-interactive atmosphere model).
K-2 3-5-ETS1-2	Develop and test multiple prototypes (movement patterns representing layer traits—ex. rotation for thermosphere, pulsing for stratosphere).
K-2 3-5-ETS1-3	Plan and carry out fair tests, collect data to improve the model (e.g., motor angle, rotation speed).

Reading	**English Language Arts (Reading & Writing)**
RI.2.3 to RI.5.3	Describe the connection between ideas and layers (e.g., “The mesosphere protects Earth from meteors”).
SL.3.1 to SL.5.1	Work in teams to explain each part of the model and how the motor brings it to life.
SL.3.4 to SL.5.4	Present projects clearly, using academic vocabulary (exosphere, thermosphere, etc.).
Writing	
W.2.2 to W.5.2	Write explanatory texts describing what each layer does and how it’s represented in the model.
Measurement	**Mathematics**

and Data	
2.MD.1 to 5.MD.2	Measure and compare distances (layer thicknesses) and movement timing (motor intervals).
4.MD.5 to 5.G.2	Apply understanding of angles and grid layout when placing layers and designing motor movement.
Operations & Algebraic Thinking	
3.OA.3 to 5.OA.3	Create numerical patterns for controlling layer motion (e.g., "rotate 45° for each layer").
Mathematical Practice Standards	**Modeling & Problem Solving**
MP2	Connect motor settings to model measurements
MP4	Use data points and motion paths to model atmospheric behavior.
MP5	Use measurement tools and coding platforms to train motors precisely.
Computer Science	**Missouri K-5 Draft Standards**
DA.K-5.1	Collect and use sensor or motion data to represent real characteristics of each layer (e.g., speed = altitude).
AP.K-5.2	Write and test simple programs to control motor movement that interacts with specific layers.
AP.K-5.3	Break down how the motor movement links to the features of the atmospheric model.
IC.K-5.1	Understand digital tools (smart motor, sensors) in real-world robotic design.