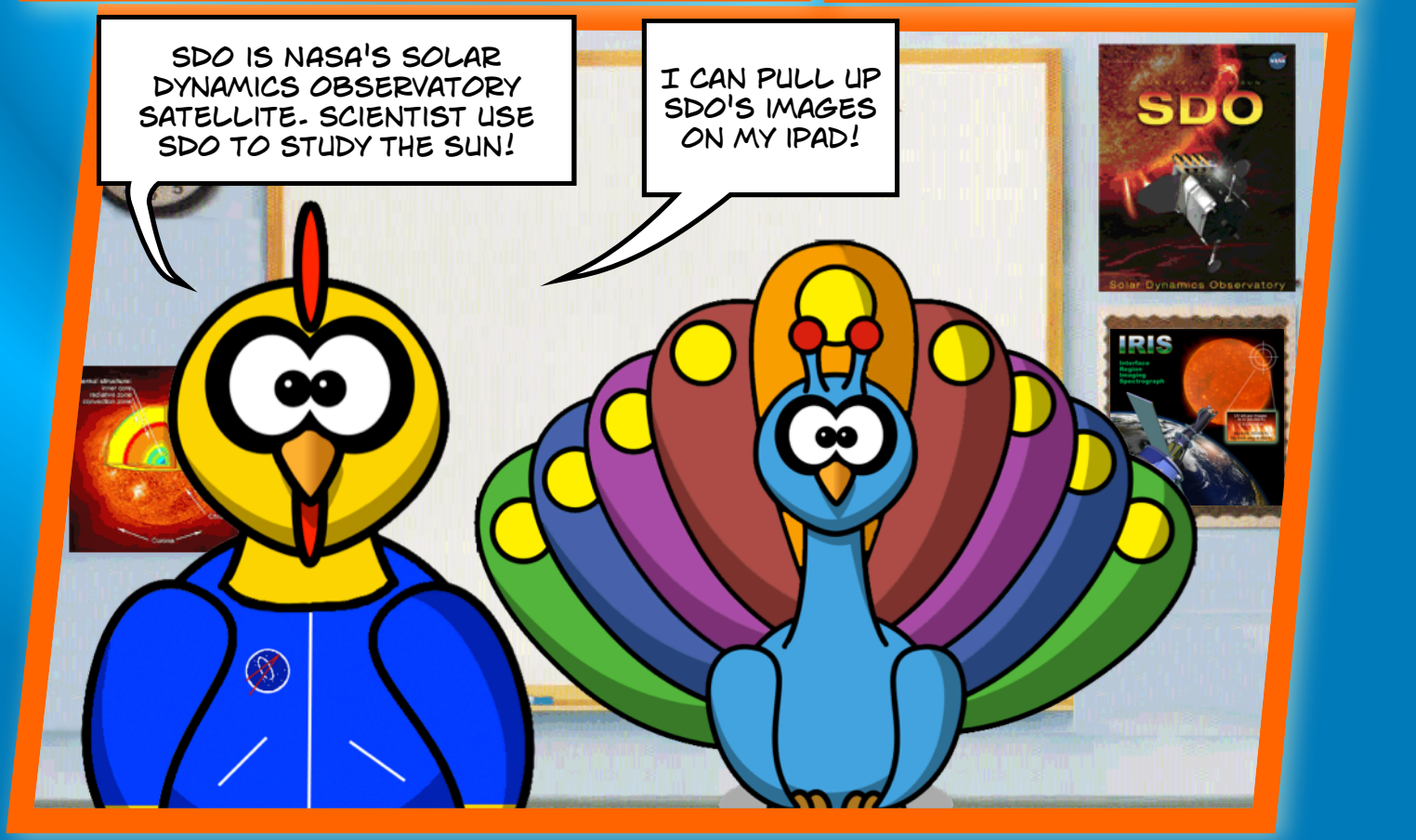
TALES FROM STANFORD AOI IA SOLAR

WHAT COLOR IS THE SUN?

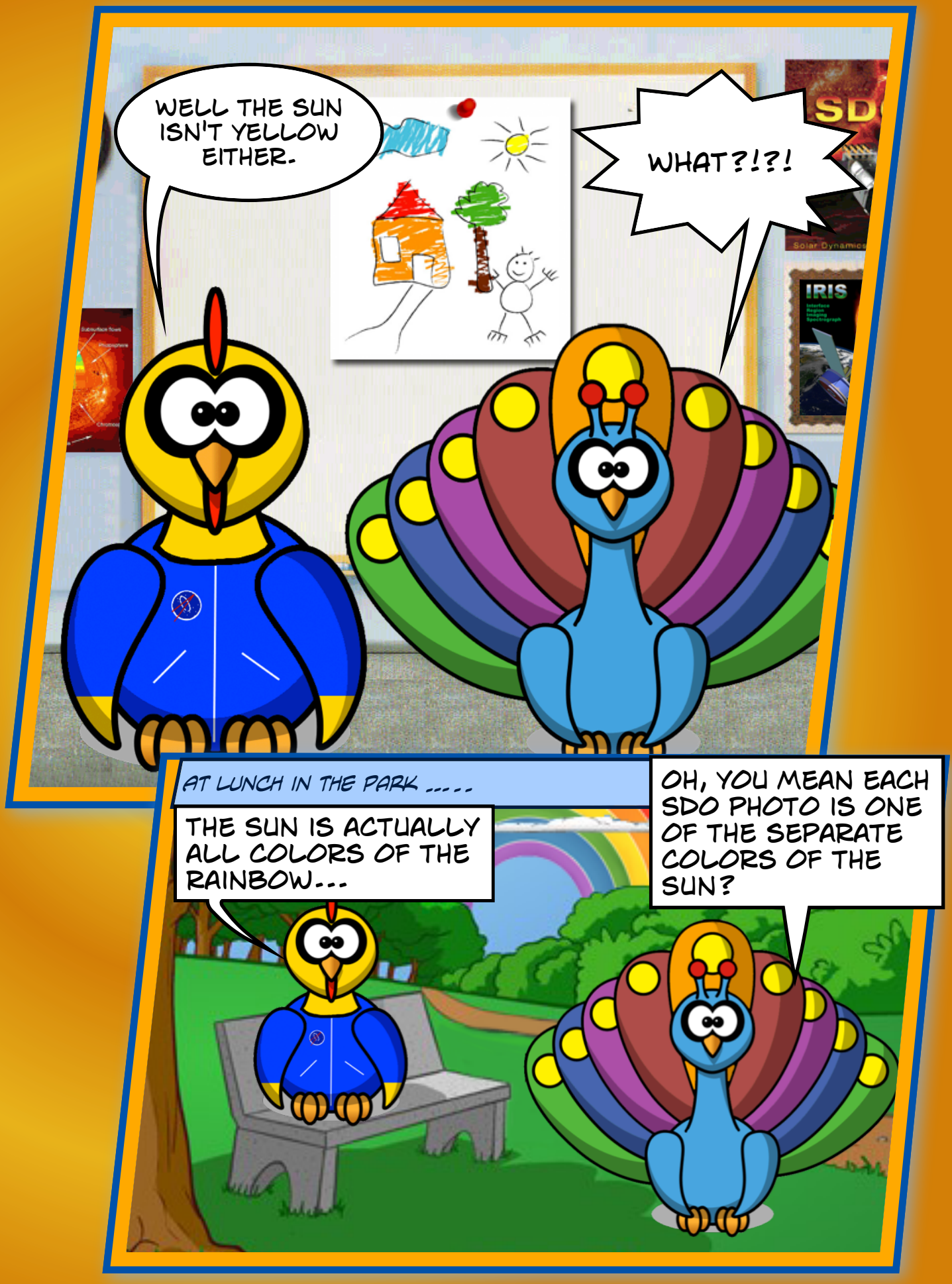
FEATURING CAMILLA CORONA AND COLOURS O'IRIS.

CIRES Education & Outreach

CAMILLA & COLOURS
WHAT COLOR IS THE SUN




THOSE ARE COOL IMAGES AND ALL BUT DON'T THEY HAVE A PICTURE OF THE REAL SUN?
SDO
Solar Dynamics Observatory
IRIS
HUH?
THEY ARE ALL THE REAL SUN!
C'MON EVERYONE KNOWS THE SUN IS YELLOW! LOOK THIS ONE IS PINK AND THAT ONE IS GREEN. YOU EXPECT ME TO BELIEVE THE SUN IS TURQUOISE!
HEY ME TOO!


WELL THE SUN ISN'T YELLOW EITHER.
WHAT?!?!
IRIS
AT LUNCH IN THE PARK .....
THE SUN IS ACTUALLY ALL COLORS OF THE RAINBOW...
OH, YOU MEAN EACH SDO PHOTO IS ONE OF THE SEPARATE COLORS OF THE SUN?

YOU'VE SEEN A RAINBOW, RIGHT?

WELL, NOT EXACTLY...

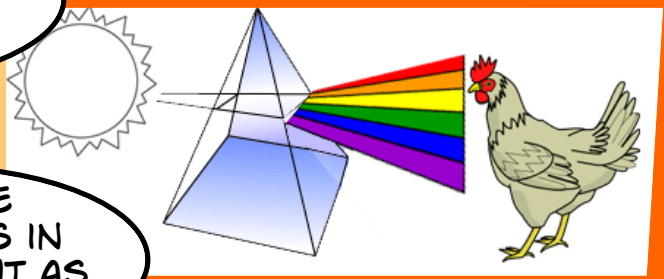
FRUSTRATED -

OF COURSE I'VE SEEN A RAINBOW. IN FACT, I AM A RAINBOW!

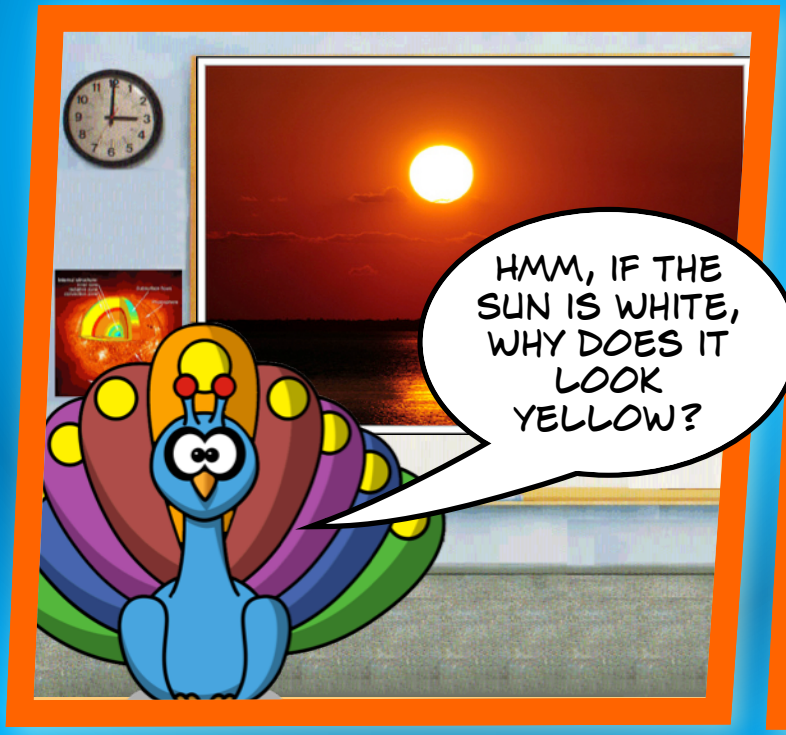
RAINBOWS SHOW ALL THE COLORS OF VISIBLE LIGHT, WHICH WE CALL WHITE LIGHT.

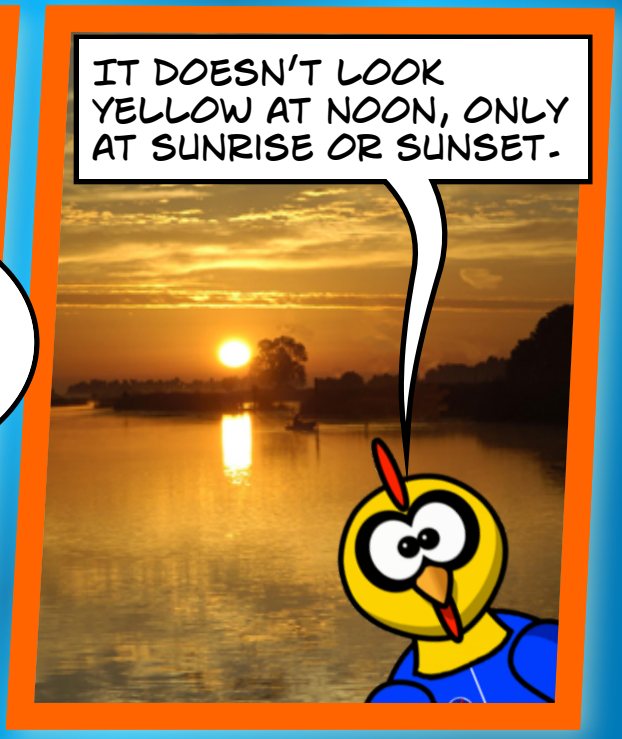
WHY IS VISIBLE LIGHT WHITE?

BECAUSE OUR EYES EVOLVED TO SEE THE MIXTURE OF COLORS IN VISIBLE LIGHT AS WHITE LIGHT.




BACK IN THE CLASSROOM
BUT WHEN I MIX ALL COLORS OF PAINT TOGETHER, I GET ICKY BROWN?
YES, BECAUSE PAINTS ARE MADE OF PIGMENTS (MATTER) NOT LIGHT (ENERGY), SO THEY WORK DIFFERENTLY.
IRIS
OK, SO MIXED PAINT = BROWN, BUT MIXED COLORS OF LIGHT = WHITE...??
SDO
IRIS
THE SUN PRODUCES ENERGY, WHICH IS DIFFERENT FORMS OF LIGHT. LIGHT THAT WE CAN SEE WITH OUR EYES IS CALLED VISIBLE LIGHT AND IT LOOKS WHITE TO US. THAT'S WHY THE CLOUDS ARE WHITE, AND THE MOON.
SDO
IRIS





AT SUNSET OR SUNRISE THE SUN CAN APPEAR VERY RED. THIS IS BECAUSE IN THAT POSITION THE LIGHT IS TRAVELING A LONG WAY THROUGH THE ATMOSPHERE WHICH THEN SCATTERS AWAY A LOT OF THE BLUE LIGHT AND JUST LEAVES THE RED LIGHT TO REACH OUR EYES.

COOL HUH!

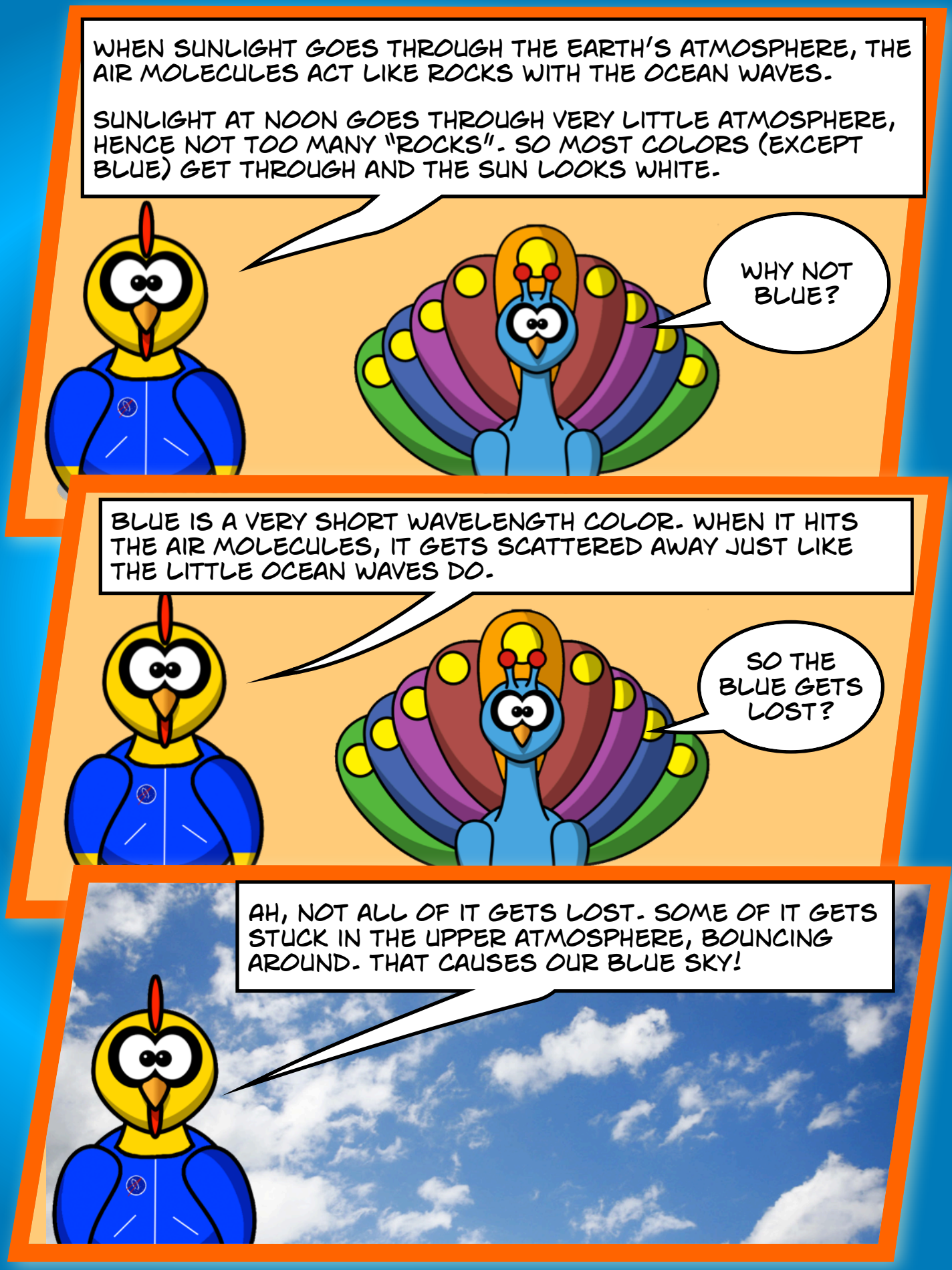
COLORS HAVE WAVELENGTHS -- JUST LIKE WAVES AT THE BEACH CAN BE LARGE OR SMALL.

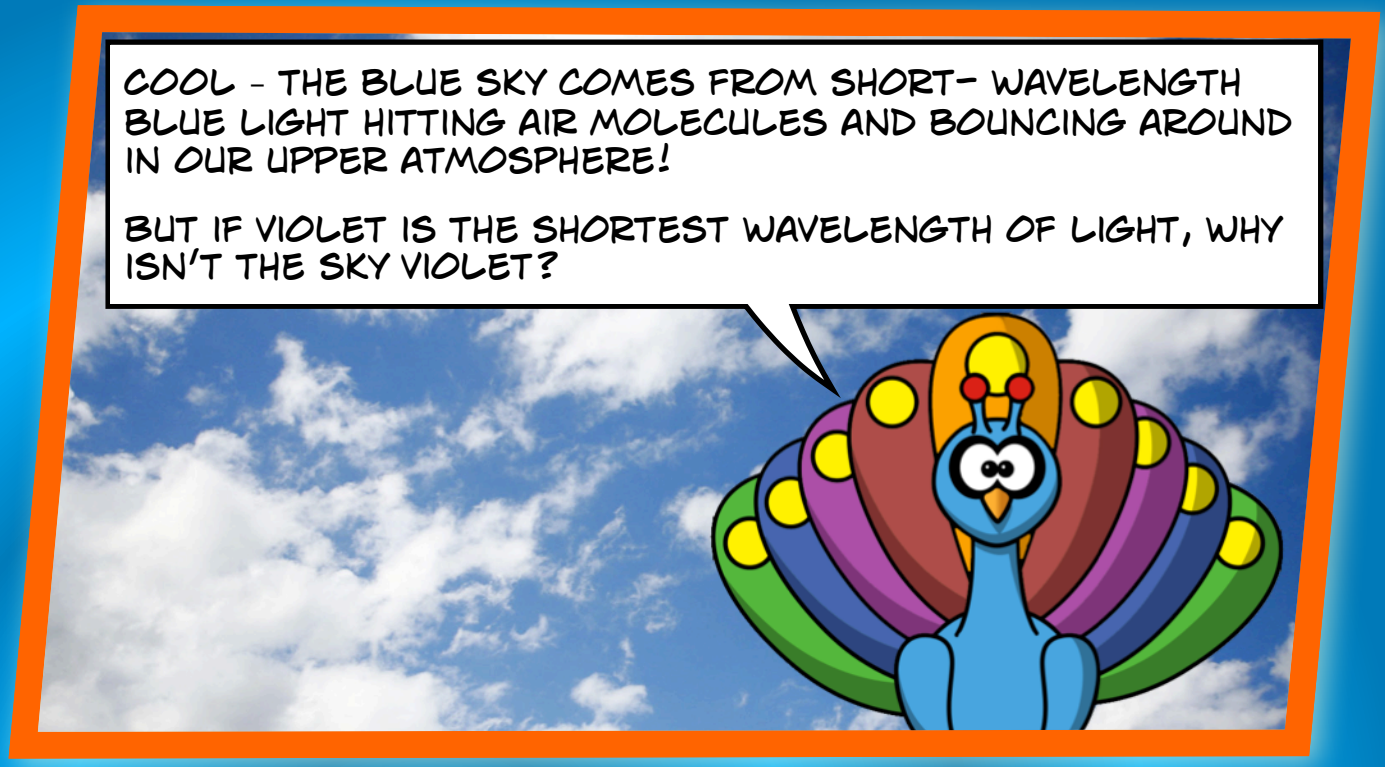
LIKE THESE BIG WAVES, THE COLORS RED AND ORANGE HAVE LONG WAVELENGTHS.

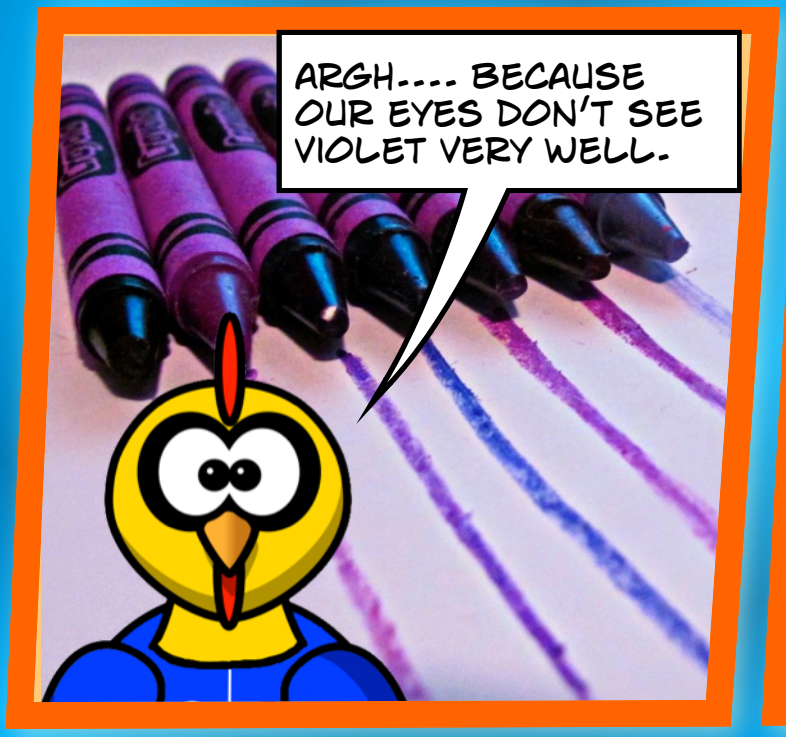
LIKE THESE SMALL WAVES, THE COLORS BLUE AND VIOLET HAVE SHORT WAVELENGTHS.

WHEN LITTLE WAVES (SHORT WAVELENGTH) HIT BIG ROCKS, THEY GET SCATTERED IN ALL DIRECTIONS AND NEVER REACH SHORE.

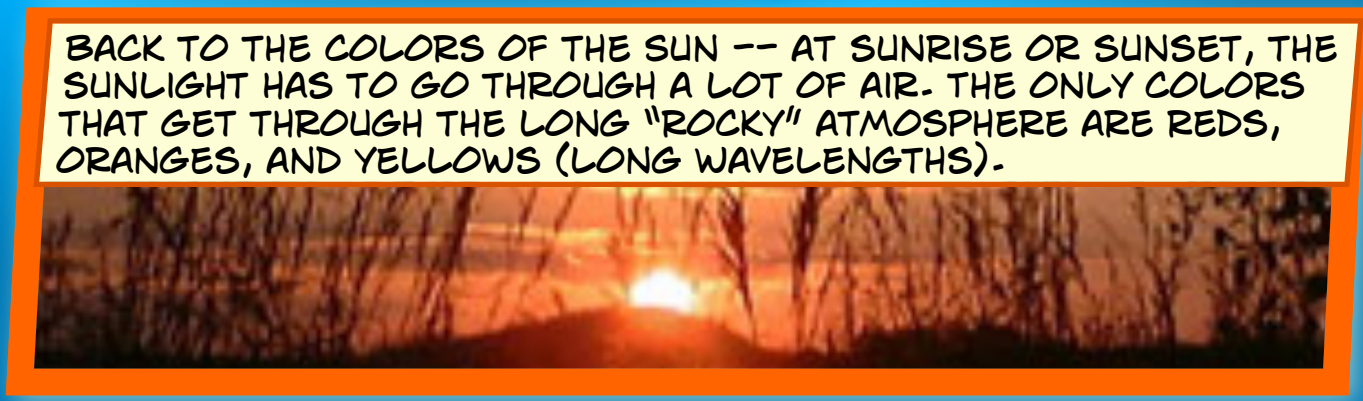
WHEN BIG WAVES (LONG WAVELENGTH) HIT THOSE SAME ROCKS, THEY ROLL RIGHT OVER THEM.

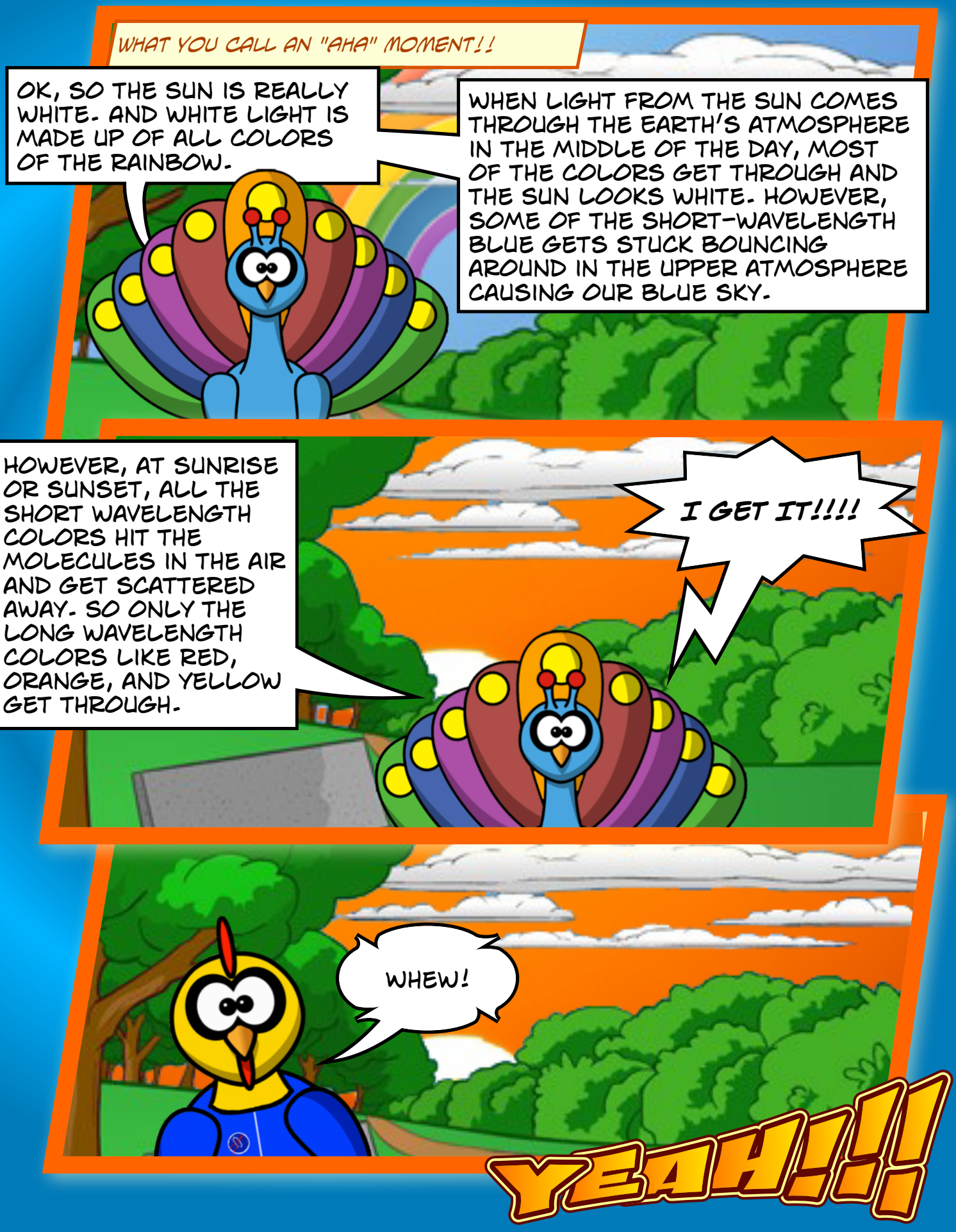

WHEN SUNLIGHT GOES THROUGH THE EARTH'S ATMOSPHERE, THE AIR MOLECULES ACT LIKE ROCKS WITH THE OCEAN WAVES.
SUNLIGHT AT NOON GOES THROUGH VERY LITTLE ATMOSPHERE, HENCE NOT TOO MANY "ROCKS". SO MOST COLORS (EXCEPT BLUE) GET THROUGH AND THE SUN LOOKS WHITE.
WHY NOT BLUE?
BLUE IS A VERY SHORT WAVELENGTH COLOR. WHEN IT HITS THE AIR MOLECULES, IT GETS SCATTERED AWAY JUST LIKE THE LITTLE OCEAN WAVES DO.
SO THE BLUE GETS LOST?
AH, NOT ALL OF IT GETS LOST. SOME OF IT GETS STUCK IN THE UPPER ATMOSPHERE, BOUNCING AROUND. THAT CAUSES OUR BLUE SKY!

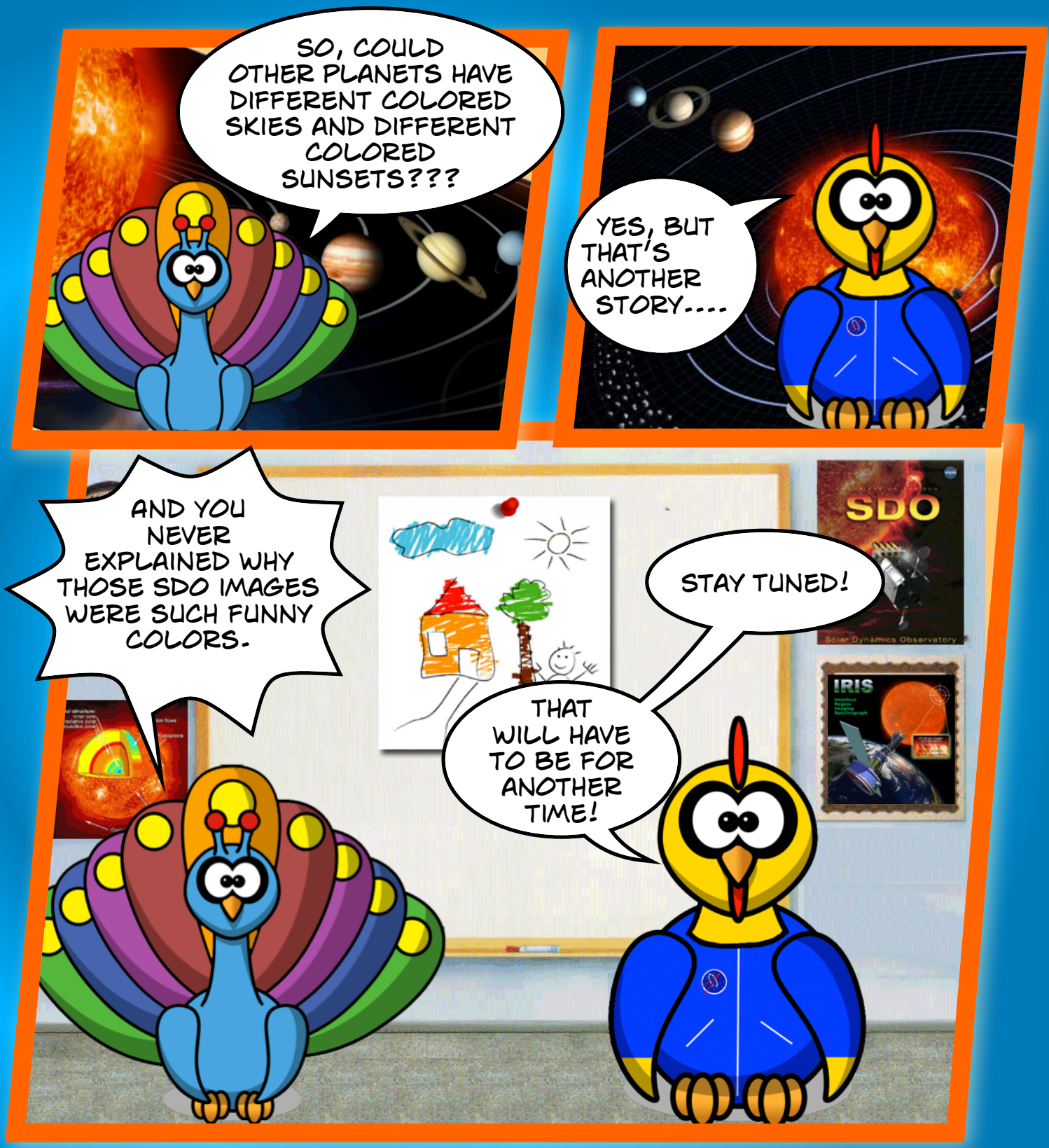

COOL - THE BLUE SKY COMES FROM SHORT- WAVELENGTH BLUE LIGHT HITTING AIR MOLECULES AND BOUNCING AROUND IN OUR UPPER ATMOSPHERE!
BUT IF VIOLET IS THE SHORTEST WAVELENGTH OF LIGHT, WHY ISN'T THE SKY VIOLET?


ARGH.... BECAUSE OUR EYES DON'T SEE VIOLET VERY WELL.


OK, SO BLUE AND VIOLET BOTH GET SCATTERED AROUND IN OUR UPPER ATMOSPHERE, BUT OUR EYES CAN'T SEE THE VIOLET....


BACK TO THE COLORS OF THE SUN -- AT SUNRISE OR SUNSET, THE SUNLIGHT HAS TO GO THROUGH A LOT OF AIR. THE ONLY COLORS THAT GET THROUGH THE LONG "ROCKY" ATMOSPHERE ARE REDS, ORANGES, AND YELLOWS (LONG WAVELENGTHS).


WHAT YOU CALL AN "AHA" MOMENT!!
OK, SO THE SUN IS REALLY WHITE. AND WHITE LIGHT IS MADE UP OF ALL COLORS OF THE RAINBOW.
WHEN LIGHT FROM THE SUN COMES THROUGH THE EARTH'S ATMOSPHERE IN THE MIDDLE OF THE DAY, MOST OF THE COLORS GET THROUGH AND THE SUN LOOKS WHITE. HOWEVER, SOME OF THE SHORT-WAVELENGTH BLUE GETS STUCK BOUNCING AROUND IN THE UPPER ATMOSPHERE CAUSING OUR BLUE SKY.
HOWEVER, AT SUNRISE OR SUNSET, ALL THE SHORT WAVELENGTH COLORS HIT THE MOLECULES IN THE AIR AND GET SCATTERED AWAY. SO ONLY THE LONG WAVELENGTH COLORS LIKE RED, ORANGE, AND YELLOW GET THROUGH.
I GET IT!!!!
WHEW!
YEAH!!!



MORE TALES FROM STANFORD SOLAR AT -
HTTP://SOLAR-CENTER.STANFORD.EDU/
FOLLOW CAMILLA AND COLOURS!

SOLAR RESOURCES

WOULD YOU LIKE TO LEARN MORE ABOUT THE SUN? HERE ARE SOME GREAT LINKS TO CHECK OUT!

FOR STUDENTS:

THE STANFORD SOLAR CENTER
HAS A LARGE COLLECTION OF ACTIVITIES, VIDEOS AND IMAGES TO EXPLORE
HTTP://SOLAR-CENTER.STANFORD.EDU/ACTIVITIES/GREENSUN.HTML

FEATURES OF THE SUN
A GREAT INTERACTIVE GAME WHERE YOU ARE A SOLAR SCIENTIST!
HTTP://LASP.COLORADO.EDU/HOME/EDUCATION/K-12/PROJECT-SPECTRA/SOLARFEATURES-INTERACTIVE/

SPACE WEATHER CENTER
LOTS OF GREAT GAMES AND FUN ACTIVITIES
HTTP://WWW.SPACEWEATHERCENTER.ORG/ACTIVITY_PAGE/01/01.HTML

FOR TEACHERS:

THE STANFORD SOLAR CENTER
HAS A LARGE COLLECTION OF LESSONS, MOSTLY 4-12
HTTP://SOLAR-CENTER.STANFORD.EDU/TEACHERS/

SDO FOR EDUCATORS
ELEMENTARY AND SECONDARY LEARNING UNITS
HTTP://SDO.GSFC.NASA.GOV/EPO/EDUCATORS/

NOVA'S SUN LAB
GREAT LESSONS AND STUDENT ACTIVITIES
HTTP://WWW.PBS.ORG/WGBH/NOVA/LABS/LAB/SUN/

OUR STAR THE SUN
COLLECTION OF SUN-THEMED CLASSROOM RESOURCES FROM NASA'S SOLAR AND HELIOSPHERIC OBSERVATORY
HTTP://SOHOWWW.NASCOM.NASA.GOV/CLASSROOM/CLASSROOM.HTML

TALES FROM STANFORD SOLAR

STORY: DEBORAH SCHERRER AND EMILY KELLAGHER

DESIGN: EMILY KELLAGHER

WHAT COLOR IS THE SUN?

THE 1ST INSTALLMENT OF "TALES FROM STANFORD SOLAR", A COMIC BOOK SERIES ADDRESSING MISCONCEPTIONS AND TOPICS IN SOLAR SCIENCE.

FEATURING CAMILLA CORONA AND COLOURS O'IRIS.

PROJECT COLLABORATION:

STANFORD SOLAR CENTER
HTTP://SOLAR-CENTER.STANFORD.EDU/

CIRES EDUCATION OUTREACH
HTTP://CIRES.COLORADO.EDU/EDUCATION/OUTREACH/