

IHY Ethiopia #1

(Music)

Titles: "Opening Eyes to Sun-Earth Connections"

Addis Ababa

Capital of Ethiopia, Northeast Africa

Teacher VO

We are opening our eyes to science and technology: especially to the western world. Since in America there is a technological advancement, they know many things, but in our case, since they get things mainly from books, since we do not have well-equipped laboratories, our students may not have sufficient knowledge as it is in the case of America.

BEREKET DINA (Student)

Science is very important to our country. To develop and to help my country, that is why I am willing... that's why I select to do science. (Ethiopia is) not a very developed country, so to help my country especially, that's why I need to learn physics, chemistry, biology.

Teacher:

This is the right time for us to open our eyes so that we can go, learn with other populations of the world.

(Music)

Title

Ethiopia's population is 77 million

43% are under age 15

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Gross national income per person, \$1,190

Girls in secondary school – 16%

Boys in secondary school – 28%

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As part of IHY, the  
International Heliophysical Year  
space scientists gather in Addis Ababa

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Supported by NASA and NSF

American researchers lead  
A workshop for 70 teachers

(Music)

**MARK MOLDWIN** (starts VO)

Ethiopia has sort of a tourist logo, is “the land of 13 months of sunshine.” It’s just a perfect setting to learn about the Sun, and the dynamic Sun, here in Ethiopia.

And looking and talking with these high school teachers, and how excited they are about the field, and I am hoping they can convey that to their students. It’s not only an Ethiopian phenomenon, but I can imagine that space fascinates children and students of all ages. And so I would love to have space weather as a vehicle exciting students learning more about the world around them

**DEBORAH SCHERRER.**

I was, whatever, 5<sup>th</sup> grade or something... and I remember reading in my “Weekly Reader” about the IGY. And so it had a major impact on me: that was the year I became really interested in astronomy. And so when I heard about the IHY, I said, that’s cool. That’s the 50<sup>th</sup> anniversary of IGY, that’s important to me, and it was important to me when I was in 5<sup>th</sup> grade, so it ought to be important to the kids now too. And it ought to be able to inspire them, just like it inspired me.

**MARK**

Deborah Scherrer had the idea of why don’t we have a workshop in Addis. We were able to line up 70 teachers, and able to bring – hopefully – the excitement of space science to Ethiopia as part of IHY.

**NEGATU WOLDE YOHANNES** (high school physics prof.)

Conducting such a meeting for high school teachers is very important because it is motivating us and we can also motivate our students.

(Music)

Title

Each teacher receives 40  
Cardboard spectrosopes  
& diffraction gratings.

**SCHERRER** (to the workshop teachers)

“So you will get a rainbow of colors, just like you do here. Plus these four strong lines. You see a scale, and lights and colors. You should just see a rainbow. What you’re going to find out with these instruments is not only does it produce a rainbow of colors, but each element has a set of colors associated with that element.”

**MOLDWIN** (to the workshop teachers)

And so that is how we can tell what the Sun is made out of. We look at the spectrum of light and we say, so it has to be hydrogen, because I see the hydrogen. Each element is unique.

**SCHERRER** (to the workshop teachers)

This is the SOHO spacecraft. It's the great solar observatory: it's circling the Sun. And it's a spectroscope. Almost everything on SOHO is a spectroscope! It's just that theirs costs millions of dollars more. But it's the same thing. It's the same technology.

Teacher (with sub-titles)

Because we are not well developed for science  
We have to improve our knowledge for physics and science.  
If they get and like these instruments and devices  
They will become scientists.  
And they need more help from developed countries.

(Teacher reviews equations for students)

**NEGATU** (HS physics prof.) (with sub-titles)

Well, in general in all communities  
science is very important because it is the way  
to understand nature, and the way to change nature.

**MOLDWIN** speaking to teacher:

"This is what the Sun would look like in the visible, and this is in the H-alpha, so you start seeing features of the atmosphere."

(Music)

**MOLDWIN**

The great thing about space science is that it's connected to what we want educated students around the world to know. We would like them to know physics, and chemistry and biology, and literature, and the history of science. And by talking to teachers we have that multiplying effect.

So here in Ethiopia they have 60 students, and each teacher has four classes. So each teacher has 240 students, so you multiply that by 70, and you can see the impact of a one day workshop. Just by raising the awareness among the next generation of Ethiopian, not scientists but lawyers and politicians and businessmen and community leaders. If they understand what science is and why we're doing science, I think that will help everyone in the long run.

(Music)

Title:

One of the workshop leaders  
is Endawoke Yizengaw  
born in Ethiopia, now at UCLA

**MOLDWIN** (to the workshop)

“Endawoke Yizengaw, he’s Ethiopian, and he’s now one of the world’s greatest space physicists. And he’s working with me at UCLA.”

#### ENDAWOKE YIZENGAW

As a kid, I was tracking the cattle, keeping my cattles. (sic) I was born from a farmer, a peasant family. My family is still a peasant. It is 300 kms away. As a scientist now, I am tracking the satellites!

(Music)

#### MOLDWIN

59% of scientists said they knew they wanted to be a scientist since they were a kid.

#### SCHERER

To get them to understand how science works, how technology works, it’s a new way to think. This can open a new world...

BERHANU (teacher, with sub-titles)

Maybe you have more scientists in the future.

We try to give them

some ideas that encourage them to  
come to this science, I think.

That’s the best part of this workshop.

MOLDWIN (to the teachers)

“So this is an example of the certificate. And it’s sponsored by the United Nations, IHY and NASA. And it says that ‘This is to certify that...’ and you can write your name, ‘has participated in a space weather science and education workshop sponsored by NASA, the National Science Foundation as part of the IHY” and it has the date.

DESLEGN KEBED (participating teacher)

It’s our wish for Ethiopia to be equivalent with the other worlds.

Astrophysics is an interesting part of physics

It’s new for our country.

Especially for all Africans  
this might introduce them to  
this part of physics.

ENDAWOKE (to the teachers)

“Thank you very much, and thank you!”

(Applause)

End credits

And here are L3s:

**MARK MOLDWIN**  
Prof. Space Physics, UCLA

**DEBORAH SCHERRER**  
Education Director, Stanford Solar Center

**ENDAWOKE YIZENGAW**  
Space physics researcher, UCLA

**BEREKET DINA**  
Student, Menelik II Secondary School

prof in school class and at workshop  
**NEGATU WOLDE YOHANNES**  
Physics teacher, Menelik II Secondary School

**BERHANU GIRMA**  
High school teacher, Addis Ababa

**DESALEGN KEBED**  
High school teacher, Addis Ababa

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