Most people here do not know most people come from different disciplines, come from different countries.

We have different experiences. This is what the workshop is designed to share.

After this morning session, I hope that we can be informal here.

It has been my dream for a long time to have a workshop on ENSO in sea here in Cuba.

Now it is happening thanks to UNAM (ceded), and UNEP.

People refer to El Nino and to ENSO (El Nino and the Southern Oscillation).

El Nino has first used to describe warming of SSTs off the coast of Peru and Ecuador.

The Southern Oscillation was used to define a changing is pressure at different points across the Pacific basin (using Darwin, Australia and Tahiti).

These phenomena are linked closely but are not the same thing.

One is local, the other is basin-wide.

But people, some scientists, the media have come to use the words interchangeably.

What we will be talking about here for the most part is the bigger phenomenon across the equatorial Pacific.

Purpose of workshop:

I wrote an article recently called: Forecasting El Nino: Science's gift to the 21st century. I believe in that title. I do not know how many others really believe it.

For decades the scientific community has promised many things.

Sometimes they have delivered what they promised.

Other times not.
HERE IS WHERE I THINK THEY CAN DELIVER.

EL NIÑO INFORMATION (NOT JUST FORECASTS OF IT) CAN UNDER THE RIGHT CONDITIONS HAVE VALUE TO THOSE WHO USE IT.

IT CAN BE USED TO MITIGATE THE IMPACTS OF EMES, IF NOT HELP US TO ADAPT TO THOSE IMPACTS AND IN SOME CASES PREVENT THEM FROM OCCURRING.

SOME PEOPLE HERE ARE EXPERTS IN EL NIÑO.

IT HAS BEEN THEIR RESEARCH LIFE.

OTHERS ARE EXPERTS IN...

STILL OTHERS IN ENVIRONMENTAL PROBLEMS

STILL OTHERS IN POLICY MAKING AT SOME LEVEL OF GOVERNMENT

THE OVERRIDING GOAL IS FOR US TO SHARE THAT EXPERTISE AND EXPERIENCE SO THAT WE CAN IDENTIFY WAYS INFORMATION ABOUT EL NIÑO MAY BE USED TO BENEFIT SOCIETY DIRECTLY OR INDIRECTLY.

NOW, SOME OF US MAY NOT KNOW MUCH ABOUT EL NIÑO.

THAT WILL NOT BE THE CASE AT THE END OF THE MEETING.

HOPEFULLY WE CAN PRESENT ENOUGH INFORMATION TO DETERMINE ITS UTILITY IN DIFFERENT CONTEXTS, GIVEN EXISTING SCIENTIFIC UNCERTAINTY THAT CONTINUES TO SURROUND THE PHENOMENON.

QUESTION: WHAT IS THE EXTENT OF THE SCIENTIFIC UNCERTAINTY SURROUNDING EL NIÑO?

QUESTION: TO WHAT EXTENT IS THAT UNCERTAINTY A HINDERANCE TO USING EL NIÑO INFORMATION IN DECISIONMAKING?

QUESTION: HOW MUCH SCIENTIFIC UNCERTAINTY CAN WE LIVE WITH; IN OTHER WORDS WHEN CAN WE FEEL CONFIDENT IN USING EL NIÑO INFORMATION?

utility of the notion of usable science

I thought that it would be best to open the meeting with a general discussion about "usable science".

Roger has been researching this notion for some years.

I thought he might present some of his thoughts about usable science to the workshop. What in essence we are trying to do is to decide just how usable EL NIÑO information is to decisionmakers.
mickey's questions about usable science:

**USABLE BY WHOM?**

People have different interest, organizations have different functions.

What is usable to one person may not be usable to another.

**USABLE BY WHEN?**

One could say that all science is usable at some time in the future.

Once it has been produced, someone in society will find a way to use it to their advantage.

But those who fund scientific research cannot seem to wait patiently for results (e.g., some research output that they can use for their benefit).

**How can we address this issue?**

Scientists need time to do their research, to improve reliability of their information, to build credibility in the info (e.g., FCSTS).

Social scientists need time to find appropriate applications/uses for the info.

We must address this; when is scientific research ready for use?

We must convince both scientists and DMS about what society can reasonable expect from each other.

Who decides what is useful?

Well, right now, it's the ones who hold the money for research.

They are the ones we must also educate about how science works and what they should reasonably expect... and when?

DMS often want to see signs of value of research?

It is not so easy to measure value.

Did a forecast really influence behavior? This is one of those difficult problems, especially when dealing with national DMS!!

QQQQQ: Is the notion of usable science usable???????
what are the region's hazards?

IN THIS SESSION

IDENTIFY A LIST OF HAZARDS FROM THE SOLICITATIONS FROM PARTICIPANTS

SORT OUT CLIMATE RELATED FROM NON-CLIMATE RELATED

CAN WE PRIORITIZE OR CATEGORIZE THEM AS MOST IMPORTANT AND LESS IMPORTANT???

neville nicholls can open with comments on the SO (atmosphere)
mark cane can open with comments on EN (ocean)
mickey and others can address TX.

WHAT ARE TX?

HOW ARE THEY IDENTIFIED?

PHYSICAL OBSERVATIONS
STATISTICAL ASSESSMENTS
ANECDOtal INFO
WISHFUL THINKING

!!!!end monday session!!!!!!