

DR. BARRIE: THANK YOU VERY MUCH,
22 MR. CHAIRMAN, LADIES AND GENTLEMEN. ALOHA. GOOD
23 MORNING.

24 ON BEHALF OF WMO AND ITS SECRETARY, MICHEL
25 JARRAUD, I WOULD LIKE TO WELCOME YOU ALL TO THIS VERY
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1 SIGNIFICANT EVENT, WHICH IS BOTH A CELEBRATION AND A
2 SCIENTIFIC FORUM.
3 THE FORUM WILL BE A VERY IMPORTANT STEP IN
4 BUILDING CONSENSUS AT THIS LEVEL ON THE ISSUES OF
5 MITIGATION AND ADAPTATION WHICH NATURALLY FOLLOW FROM
6 THE OBSERVATIONAL GROUNDWORK THAT HAS BEEN LAID OVER
7 THE LAST 50 YEARS, AND THAT WE WILL HEAR A LOT ABOUT
8 TODAY. WE ARE HERE CELEBRATING THE SUCCESS OF THE
9 LONG-TERM RECORD OF CHARLES DAVID KEELING IN MAKING
10 THE FIRST MEASUREMENTS OF CARBON DIOXIDE ON MAUNA
11 LOA, AND SUSTAINING THEM OVER SUCH A LONG PERIOD OF
12 TIME. THESE MEASUREMENTS WERE LATER SUSTAINED AND
13 BROADENED BY NOAA, NASA, THROUGH THE AGAGE PROGRAM, I
14 MIGHT ADD, AND OUR GLOBAL COMMUNITY, ASSISTED BY WMO
15 AND OTHER AGENCIES.

16 RECENTLY I WAS READING AN INTERESTING BOOK
17 CALLED "MEASURING THE WORLD," BY DANIEL KEHLMANN, AND
18 IT HAD TO DO WITH TWO SCIENTISTS, CARL GAUSS AND
19 ALEXANDER VON HUMBOLDT, WHO LAID GROUND WORK IN
20 MEASUREMENT AND EARTH SCIENCES; AND IT UNDERLINED THE
21 TRIALS AND TRIBULATIONS THAT CHARLES KEELING FACED AS
22 A MEASURER OF THE WORLD. THEY BOTH FACED, DESPITE
23 THEIR CONSIDERABLE NOTORIETY AND REPUTATION,
24 FINANCING PROBLEMS; AND LIKE CHARLES KEELING, THROUGH
25 SHEER INGENUITY AND STUBBORNNESS, THEY PREVAILED. SO
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1 THIS IS VERY MUCH A UNIVERSAL FEATURE OF SOCIETY.
2 AND WE MUST CONTINUE TO PREVAIL IN SUSTAINING EARTH
3 OBSERVATIONS.

4 WMO IS COMMITTED TO SUPPORTING AN
5 INTEGRATED GLOBAL OBSERVATION SYSTEM IN ALL SENSES.
6 BEFORE I GO ON, PERHAPS IT'S ENLIGHTENING TO SOME OF
7 YOU WHO DON'T KNOW ABOUT WMO TO TELL YOU A LITTLE BIT
8 ABOUT IT AS FAR AS THE KEY FEATURES. ONE IS THAT
9 IT'S A SEPARATE OPERATING ORGANIZATION OF THE UNITED
10 NATIONS THAT CAME TOGETHER AS SUCH AFTER THE WAR TO
11 COORDINATE GLOBAL EARTH OBSERVATIONS RELATED TO
12 METEOROLOGICAL VARIABLES OF CLIMATE, BUT IT'S BEEN
13 INVOLVED IN ATMOSPHERIC CHEMISTRY OBSERVATIONS SINCE
14 THE '60S AND IN THE GREENHOUSE GASSES SINCE THE '70S.
15 IT HAS A PROVEN RECORD IN GLOBAL COORDINATION. IT'S
16 A VERY FEDERATED SYSTEM THAT IS NOT UNLIKE OUR
17 PARTNER, UNEP, SUITED TO GLOBAL COORDINATION OF
18 OBSERVATIONS IN THE ATMOSPHERE.

19 THE ONE GOOD EXAMPLE OF A PROVEN RECORD
20 THAT ALL OF US CAN CITE IN INTERNATIONAL COOPERATION
21 IS THE SCIENTIFIC ASSESSMENTS THAT LED UP TO THE
22 VIENNA CONVENTION FOR THE PROTECTION OF THE OZONE
23 LAYER, THE MONTREAL PROTOCOL, AND THE SUBSEQUENT
24 SUCCESSFUL CURBING OF OZONE DEPLETING SUBSTANCES IN
25 THE ATMOSPHERE. THIS IS AN EXAMPLE OF AN

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1 INTERNATIONAL WMO/UNEP PARTNERS-DRIVEN,
2 NATIONAL-PARTNERS-DRIVEN SUCCESS STORY THAT COULD BE
3 USED TO GIVE US HOPE FOR TACKLING THE CARBON
4 MITIGATION/ADAPTATION ISSUES THAT FACE US IN THE
5 FUTURE.

6 WMO PROGRAMS IN RESEARCH AND DEVELOPMENT
7 ARE ALSO VERY WELL DEVELOPED AND COORDINATING A LARGE
8 PARTNERSHIP, AND THESE PROGRAMS ARE DEDICATED TO
9 INTEGRATING OBSERVATIONS USING MODELS TO DELIVER
10 PRODUCTS THAT ARE OF BENEFIT TO SOCIETY, PRODUCTS
11 THAT ARE WEATHER PRODUCTS, CLIMATE PRODUCTS, AIR
12 QUALITY PRODUCTS.

13 THE PROGRAMS THAT ARE KEY HERE ARE THE
14 GLOBAL ATMOSPHERE WATCH THAT WAS JUST MENTIONED
15 RELATED TO ATMOSPHERIC CHEMISTRY; THE WORLD WEATHER
16 RESEARCH PROGRAM AND ITS RELATED TRUST FUND
17 INITIATIVE, THORPEX, DEDICATED TO WEATHER RESEARCH;
18 AND THE WORLD CLIMATE RESEARCH PROGRAM, WHICH WMO
19 COSPONSORS WITH THE INTERNATIONAL OCEANOGRAPHIC
20 COMMISSION AND ICU, THE INTERNATIONAL COUNCIL OF
21 UNIONS.

22 NOW, IN THE NEXT DECADE, POOLING OF EFFORTS
23 OF WEATHER, CLIMATE, AND AIR CHEMISTRY SPECIALISTS IN
24 THE DEVELOPMENT OF HIGH-RESOLUTION SUPER PREDICTION
25 SYSTEMS WILL BE UPON US. THE RESOLUTION OF GLOBAL

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1 MODELS ARE BECOMING SUCH THAT WE HAVE TO BAND
2 TOGETHER TO TACKLE SOME OF THE KEY PROBLEMS RELATED
3 TO CLOUDS AND PRECIPITATION AND PARAMETERIZATION OF
4 SUCH.

5 ALSO, WMO HAS PROGRAMS IN APPLICATION
6 DELIVERY THAT SERVES DEVELOPING COUNTRIES. I THINK
7 THIS IS KEY CAPACITY BUILDING OF THIS ORGANIZATION.

8 SO WHAT ROLE HAVE WE PLAYED IN HELPING
9 SUSTAIN AND BROADEN THE INITIAL MEASUREMENTS OF DAVID
10 KEELING ON MAUNA LOA?

11 THIS SERIES OF PICTURES I THINK,
12 ILLUSTRATES IT. IT'S WORTH A THOUSAND WORDS. THE
13 LOWER LEFT-HAND PHOTOGRAPH HAS A SMALL GROUP OF
14 PEOPLE GATHERING IN 1975 AT SCRIPPS THAT INCLUDES TWO
15 CANADIANS, DAVE LOWE FROM NEW ZEALAND, WHO I THINK IS
16 THE ONLY PERSON HERE FROM THAT GROUP, GRAEME PEARMAN,
17 AND A WHOLE GROUP OF NOAA AND U.S. REPRESENTATIVES,
18 INCLUDING LESTER MACHTA, DON PACK, IF ANY OF YOU
19 REMEMBER; AND THIS GROUP IS RELATIVELY SMALL BUT
20 RECOGNIZING THE NEED TO MOVE FORWARD IN A BROADER
21 NETWORK EFFORT.

22 THE RIGHT-HAND PICTURE REPRESENTS THE
23 13TH MEETING, 30TH ANNIVERSARY OF THE WMO
24 INTERNATIONAL ATOMIC ENERGY ASSOCIATION. EXPERTS
25 MEETING ON GREENHOUSE GASSES CONVENED AT NOAA IN

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1 BOULDER IN 2005. EVERY TWO YEARS THIS GROUP MEETS,
2 AND YOU CAN SEE THE CHANGE IN SIZE OF COMMUNITY.
3 THIS GROUP MEETS TO STEWARD FORWARD THE INTEGRATED
4 GLOBAL CARBON OBSERVATIONAL SYSTEM. IT'S A DYNAMIC

5 MIX OF OBSERVATION, PEOPLE ENGAGED IN SYSTEMATIC
6 OBSERVATIONS AND RESEARCH, AND PROVIDES AN EXAMPLE OF
7 A DIFFERENT ROLE MODEL THAN OPERATIONAL METEOROLOGY
8 HAS FOR DEALING WITH ATMOSPHERIC CHEMISTRY
9 OBSERVATIONS. THAT IS STRONG INTEGRATION OF RESEARCH
10 AND DEVELOPMENT ANALYSIS WITH SYSTEMATIC
11 OBSERVATIONS.

12 SO THE NETWORK HAS BROADENED OVER THE
13 YEARS, AND NOW WE HAVE GLOBALLY 24 -- SURFACE-BASED
14 NETWORK-WISE -- 24 GLOBAL OBSERVATORIES, WHICH MAUNA
15 LOA IS THE OLDEST OR AMONGST THE OLDEST, AND 60
16 REGIONAL OBSERVATORIES THAT ARE A LITTLE SMALLER BUT
17 ENHANCE COVERAGE, 70 PERCENT OF WHICH ARE MAINTAINED
18 BY NOAA AND THE REST BY OUR PARTNER COUNTRIES.

19 AIRCRAFT AND SATELLITE OBSERVATIONS ARE
20 COMING ALONG STRONG, ESPECIALLY AIRCRAFT. JAPAN
21 AIRLINES' COMMERCIAL AIRCRAFT HAVE OPERATED
22 OBSERVATIONS NOW SYSTEMATICALLY AND ARE JOINED BY
23 NOAA'S LIGHT AIRCRAFT VERTICAL PROFILING.
24 SATELLITES, AS I MENTIONED, ARE COMING ON STRONG AT
25 THE MOMENT. WE HAVE SCIAMACHY AND AIRS THAT CAN GIVE

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1 SOME MEASURE OF GREENHOUSE GASSES IN THE ATMOSPHERE,
2 AND THESE WILL SOON BE JOINED BY TWO OTHER
3 SATELLITES: THE ORBITING CARBON OBSERVATORY OUT OF
4 THE JPL AND U.S. INITIATIVE, AND GOSAT FROM JAPAN.

5 THERE IS CONCERN AMONGST THE GLOBAL
6 OBSERVATIONAL COMMUNITY THAT THE BALANCE BETWEEN
7 GROUND-BASED AIRCRAFT AND SATELLITE OBSERVATIONS MAY
8 BE TIPPING TOO STRONGLY TOWARDS SATELLITE
9 OBSERVATIONS AND THAT WE NEED TO BE VERY CAREFUL THAT
10 WE MAINTAIN THE BALANCE AND RECOGNIZE THE VALUE OF
11 THE SURFACE-BASED OBSERVATIONS; AND, PERHAPS, THERE
12 ARE MECHANISMS TO DO THIS. SO WE ARE THINKING ABOUT
13 THIS AND AWARE OF IT.

14 I MIGHT SAY THAT NOAA ALSO HAS A MAJOR
15 CONTRIBUTION TO THE GLOBAL OBSERVATIONAL SYSTEM IN
16 THAT IT MAINTAINS THE WORLD REFERENCE STANDARD FOR
17 FOUR GASSES, THE THREE MAJOR GREENHOUSE GASSES AND
18 CARBON MONOXIDE, AS WELL. AND THIS IS SOMETHING THAT
19 IS NOT EXCITING ACTIVITY, BUT IT IS ABSOLUTELY
20 ESSENTIAL. QUALITY ASSURANCE ENSURES MERGABILITY OF
21 DATA WORLDWIDE, AND IT IS A HUGE RETURN ON OUR
22 INVESTMENT IN OBSERVATION.

23 ARCHIVING OF DATA AT THE WORLD DATA CENTER
24 FOR GREENHOUSE GASSES IN JAPAN DOESN'T STOP THERE.
25 WE MOVE ON WITH PRODUCTS. AND THIS JOINT PRODUCT

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1 THROUGH THE SCIENTIFIC ADVISORY GROUP OF WMO AND
2 GREENHOUSE GASSES, NOAA, AND JMA, THE DATA CENTER, IS
3 THE "GREENHOUSE GAS BULLETIN," AND COPIES ARE
4 RELEASED HERE, AND IT WILL BE DISTRIBUTED IN BALI
5 NEXT WEEK. IT HIGHLIGHTS FOR THE FIRST TIME -- AND
6 THIS IS, I THINK, RATHER SIGNIFICANT, I THINK DAVID
7 KEELING WOULD BE REALLY QUITE EXCITED ABOUT THIS --
8 THE INTRODUCTION THIS YEAR OF NOAA'S CARBON TRACKER,
9 WHICH IS A CARBON CYCLE MODEL THAT ASSIMILATES

10 SURFACE-BASED OBSERVATIONS AND VALIDATES THE PRODUCT,
11 USING VERTICAL PROFILING BY AIRCRAFT TO GIVE US A
12 SMART ESTIMATE OF THE GLOBAL DISTRIBUTION OF CARBON
13 DIOXIDE AND THE NET EXCHANGE OF CARBON BETWEEN THE
14 ATMOSPHERE AND THE OCEAN, AND THIS PRODUCT IS NOW
15 BEING -- IT'S A HARBINGER OF MANY SIMULATION-TYPE
16 EFFORTS THAT WILL BE GOING ON IN THE ATMOSPHERIC
17 WORLD IN THE FUTURE.

18 SO WITHOUT FURTHER ADIEU, I WOULD LIKE TO
19 JUST END, AND ON BEHALF OF WMO, THANK YOU FOR
20 CONVENING THIS VERY IMPORTANT SESSION AND WISH YOU
21 ALL THE BEST SUCCESS IN THE DISCUSSIONS IN THE
22 FUTURE.

23 THANK YOU.