Message

From: Tonnesen, Gail [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=74A573ADAC664C25B77C5B4DAE45A54C-TONNESEN, GAIL]
Sent: 1/18/2017 11:04:19 PM
To: Landes - CDPHE, Scott [scott.landes@state.co.us]
CC: Welsh - CDPHE, Dan [dan.welsh@state.co.us]; Amber Ortega - CDPHE [amber.ortega@state.co.us]
Subject: RE: Stratospheric intrusion research at NASA Goddard

Hi Scott,

I added Dan and Amber to my email list for the stratospheric intrusion work group. The next call will be Feb 21, 10 am MT. I'll send an email with more details and call number before the call.

thanks,
Gail
303-312-6113

From: Landes - CDPHE, Scott [mailto:scott.landes@state.co.us]
Sent: Wednesday, January 18, 2017 3:06 PM
To: Tonnesen, Gail <Tonnesen.Gail@epa.gov>
Subject: Re: Stratospheric intrusion research at NASA Goddard

Also -- could you please add the following two e-mails to the work group e-mail:

dan.welsh@state.co.us
amber.ortega@state.co.us

Thanks!

On Tue, Jan 17, 2017 at 2:51 PM, Tonnesen, Gail <Tonnesen.Gail@epa.gov> wrote:

Hi All,

Previously I had Pat and Chuck on my email list for the stratospheric intrusion work group monthly meeting. I thought that I had added Scott after Pat Reddy retired, but I just checked and I don't have you in my email list. Generally we have a telecon the 3rd Tuesday each month at 10 am MT, although we have cancelled several calls during the last year because of low activity.

I'll add Scott to my email list, and please let me know if anyone else from CDPHE should be included. For our next call on Feb 21st, Andy Langford from NOAA will give an update on phase 2 of the Las Vegas O3 Study that includes O3 lidar profiles.

thanks,

Gail

Gail Tonnesen, Ph.D.

EPA Region 8 - Air Program

1595 Wynkoop St.

Denver, CO 80202

303-312-6113

From: Katherine Emma Knowland [mailto:katherine.e.knowland@nasa.gov]
Sent: Tuesday, January 17, 2017 1:17 PM
To: Patrick Reddy <[redacted]>
Cc: Landes - CDPHE, Scott <scott.landes@state.co.us>; Welsh - CDPHE, Dan <dan.welsh@state.co.us>; Amber Ortega - CDPHE <amber.ortega@state.co.us>; Gordon Pierce <gordon.pierce@state.co.us>; gregory.harshfield@state.co.us; Duncan, Bryan N. (GSFC-6140) <bryan.n.duncan@nasa.gov>; Tonnesen, Gail <Tonnesen.Gail@epa.gov>; Payton, Richard <Payton.Richard@epa.gov>
Subject: Re: Stratospheric intrusion research at NASA Goddard

Hi Pat,

For the last few months I have focused on stratospheric intrusions over western USA during spring of 2012 with case studies over Colorado. In my analysis of the case studies, I have used similar indicators for tropopause folding events as you listed, specifically meteorological and constituent (O3, CO) data from observations, the MERRA-2 reanalysis, and GEOS-5 simulated tracers. I am working on a possible GRL paper on the representation of the case study folds in the high-resolution MERRA-2 reanalysis as a prequel to a greater study building a climatology of stratospheric intrusion events over the western and eastern USA using a tracking algorithm. In an effort to validate the long-term study with information on other years and other sites, I am wondering if there is a publicly available list of the dates and locations which receive 'full event flag' and 'information flag only' labels or is that information internal only? I've found some of your work online such, as http://www.westar.org/12%20Tech%20Conf/Presentations/Reddy.pdf which shows a table with exceedences with dates in green for stratospheric intrusions, but I have struggled to find this information on the CDPHE website or EPA website. I found possibly an outdated list on http://webapps.datafed.net/exceedance.aspx?parameter=ozone which has a few events in the 2010-2012 period marked with a stratospheric intrusion data quality flag from AQS.

Kind regards,

Emma

On 11/02/2016 03:24 PM, Patrick Reddy wrote:

Hi Emma,

Sorry for the delay in getting back to you. Yes, I am still a good contact for this topic. I am working part time for CDPHE until December 15, and I am a visiting scientist at NCAR ACOM, and I might continue to contribute to interagency workgroups on intrusions next year. Scott Landes (meteorologist), Dan Welsh (meteorologist), and Amber Ortega (atmospheric chemist and meteorologist) are now responsible for this topic at CDPHE and for identifying and analyzing events for flagging. In the past we have used meteorological data (isentropic potential vorticity, relative humidity, storm structure data) and whatever satellite (total column ozone, AIRS 600 mb CO) and modeled data (the IDEA stratospheric intrusion tool and RAQMS and NCAR MOZART stratospheric O3 or 500 mb O3 and various large source groups for CO) we could find. CO is an inverse indicator for stratospheric air and a positive indicator for possible Asian or west coast US ozone.

In general an event received an informational flag if the contribution of stratospheric ozone seemed relatively small and/or the data that would normally support a full event flag was sparse or inconclusive. Many of the ambiguous intrusion events occur in late May or June when there is significant anthropogenic ozone, a continuing influx of material from Asia, and when greater mixing dilutes some of the meteorological indicators for intrusions. Model data is always a welcome addition.

The folks I just mentioned are busy working on smoke and intrusion exceptional events for 2016. Because of the new O3 standard, these reports have to be finished by next spring. I think they would love to work with you on these exceptional events in general, and it might make sense for all of you to consider how you can help each other with your respective projects.

Regards,

Pat Reddy

On Tue, Oct 25, 2016 at 11:58 AM, Katherine Emma Knowland <katherine.e.knowland@nasa.gov> wrote:

Dear Pat,

My name is Emma Knowland and I am a new research scientist at NASA Goddard working with Lesley Ott and Bryan Duncan. I'm interested in regional and seasonal differences in stratospheric intrusions over the US, and how well our GEOS-5 products can represent these intrusions. Lesley provided me with your list of stratospheric intrusions over Colorado during spring of 2012, some of which have 'full event flag' and others with 'information flag only'. I'm interested in knowing more about your work at CDPHE, in particular, the tools you used to identify the impact of stratospheric air on surface observations and the differences in the classifications of 'full event' and 'information flag only'. Did an event only get an 'information flag' because the models were not able to confirm the intrusion? Was there a lack of other observational data to support the surface observations? Bryan tells me you are now retired (congratulations!) and I was wondering if you are still the right person to direct my questions to regarding stratospheric intrusion candidates, or if there is someone else at CDPHE I should contact.

Thank you.

Kind regards,

Emma Knowland

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K. Emma Knowland, PhD
Global Modeling and Assimilation Office/USRA
NASA Goddard Space Flight Center Bldg 33
Code 610.1, Greenbelt, MD, 20771
Phone: +1-301-614-6342

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K. Emma Knowland, PhD
Global Modeling and Assimilation Office/USRA
NASA Goddard Space Flight Center Bldg 33
Code 610.1, Greenbelt, MD, 20771
Phone: +1-301-614-6342

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Scott J Landes
Supervisor/Air Quality Meteorologist
Meteorology and Prescribed Fire Unit
Technical Services Program

303-692-3255
scott.landes@state.co.us