Subject: Empirical Orthogonal Function analysis in IDL
Posted by dean on Fri, 08 Apr 1994 05:20:57 GMT
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Has anyone used IDL to do an Empirical Orthogonal Function analysis? We can do this in FORTRAN with IMSL routines, put would like to do it in IDL.
This analysis requires the use of a matrix into its eigen values and eigen vectors.

If anyone has any suggetions, I would like to hear them.

Thanks,

Kelly Dean
CSU/CIRA

Subject: Re: Empirical Orthogonal Function Analysis in IDL
Posted by David Fanning on Sun, 27 Apr 2008 17:30:27 GMT
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d.poreh@gmail.com writes:

> It is very interesting to me. I=92ve never heard about this method. I
> have another problem now:
> How we can extract the hottest point in the world based on this data
> (for each year we have a maximum temperature somewhere) and plot this
> on the world map (with a projection) for 1969 until now?

Well, I think I might use the MAX function in IDL. :-)

Cheers,

David

--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.dfanning.com/
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: Empirical Orthogonal Function Analysis in IDL
Posted by Gaurav on Mon, 28 Apr 2008 07:37:36 GMT
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>> But in the course of writing my own, I stumbled onto a

>> mathematical trick that allowed me to produce identical
>> results compared to the old way in about four tenths of a
>> second! Wow! Big breakthrough.

So does it mean that my weatherman will be able to make better predictions or does it mean that he will be able to continue making his blunders in a fraction of the time that he took earlier?

Gaurav

Subject: Re: Empirical Orthogonal Function Analysis in IDL
Posted by David Fanning on Mon, 28 Apr 2008 12:37:21 GMT
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Gaurav writes:

> So does it mean that my weatherman will be able to make better
> predictions or does it mean that he will be able to continue making
> his blunders in a fraction of the time that he took earlier?

Weather is, well, weather. We are interested in climate here. :-)

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.dfanning.com/
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: Empirical Orthogonal Function Analysis in IDL
Posted by d.poreh on Wed, 30 Apr 2008 11:38:19 GMT
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On Apr 28, 6:00 pm, "R.G. Stockwell" <notha...@noemail.com> wrote:
> "David Fanning" <n...@dfanning.com> wrote in message
>
> news:MPG.227d9a5a350546898a346@news.frii.com...
>
>> Folks,
>> I don't take credit for the trick (I found it in Wilks
>> outstanding book, Statistical Methods in the Atmospheric
>> Sciences) and it took about three of us, working together,
>> to produce the serendipity needed to come to the realization

>> of what we were doing. But it is definitely worth knowing
>> about.
David
I didn’t work too much on this data. I just put a MAX function on
air and it give me something like 53 °C but the hottest point in the
earth is something between 68-73°C. what you think about?

Cheers
Dave

Subject: Re: Empirical Orthogonal Function Analysis in IDL
Posted by David Fanning on Wed, 30 Apr 2008 12:53:14 GMT
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d.poreh@gmail.com writes:

> I didn=92t work too much on this data. I just put a MAX function on
> *air* and it give me something like 53 =B0C but the hottest point in the
> earth is something between 68-73=B0C. what you think about?

I think it is going to be hard to come up with extremely
hot temperatures for data made up of monthly mean
temperatures. ;-)

Cheers,

David
--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming: http://www.dfanning.com/
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: Empirical Orthogonal Function Analysis in IDL
Posted by d.poreh on Wed, 30 Apr 2008 14:15:32 GMT
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On Apr 30, 2:53 pm, David Fanning <n...@dfanning.com> wrote:
> d.po...@gmail.com writes:
>> I didn=92t work too much on this data. I just put a MAX function on
>> *air* and it give me something like 53 =B0C but the hottest point in the
>> earth is something between 68-73=B0C. what you think about?
>
> I think it is going to be hard to come up with extremely
> hot temperatures for data made up of monthly mean

> temperatures. ;-)
>
> Cheers,
>
> David
> --
> David Fanning, Ph.D.
> Fanning Software Consulting, Inc.
> Coyote's Guide to IDL Programming:http://www.dfanning.com/
> Sepore ma de ni thui. ("Perhaps thou speakest truth.")

You mean something like averaging dumps the data? It is strange!!!
:-(
cheers

Subject: Re: Empirical Orthogonal Function Analysis in IDL
Posted by David Fanning on Wed, 30 Apr 2008 15:36:33 GMT
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d.poreh@gmail.com writes:

> You mean something like averaging dumps the data? It is strange!!!

Yeah, it's a mathematical thing. :-(

Cheers,

David

--
David Fanning, Ph.D.
Fanning Software Consulting, Inc.
Coyote's Guide to IDL Programming (www.dfanning.com)
Sepore ma de ni thui. ("Perhaps thou speakest truth.")

Subject: Re: Empirical Orthogonal Function Analysis in IDL
Posted by R.G. Stockwell on Wed, 30 Apr 2008 15:50:08 GMT
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"David Fanning" <news@dfanning.com> wrote in message
news:MPG.22823fea344684119896f4@news.frii.com...
> d.poreh@gmail.com writes:
>
>> You mean something like averaging dumps the data? It is strange!!!
>

> Yeah, it's a mathematical thing. :-(

Can be thought of as applying a boxcar filter in time domain
(hence multiplying the spectrum with a sinc function) then performing
a downsampling operation in the time domain (i.e. truncating the spectrum).

Can introduce aliasing (a lil bit).

definitely places a null at certain frequencies, and passes (albeit
attenuatedly) some higher frequencies.

Cheers,
bob

PS Personally, I would never mean data together - i'd apply a better filter
than ye ole boxcar.
