Subject: Re: code for Kendall trend test
Posted by David Fanning on Mon, 21 Jan 2008 22:53:26 GMT
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txomingo99@gmail.com writes:

> Does any one have or know a place to find free code in IDL to compute
> the Mann-Kendall trend test and the seasonal Kendall trend test?

I've been meaning to write an article about this, but I
would look in the IDL distribution: R_CORRELATE.

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: code for Kendall trend test
Posted by txomingo99 on Tue, 22 Jan 2008 14:52:37 GMT
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On Jan 21, 5:53 pm, David Fanning <n...@dfanning.com> wrote:
> txoming...@gmail.com writes:
>> Does any one have or know a place to find free code in IDL to compute
>> the Mann-Kendall trend test and the seasonal Kendall trend test?
>
> I've been meaning to write an article about this, but I
> would look in the IDL distribution: R_CORRELATE.

Thanks for the suggestion!! I had already looked at it but it only
computes the rank correlation between two populations. My programming
skils are quite limited and I think that it's imposible for me to go
from R_CORRELATE to the final trend test. Any other suggestion?

Cheers,
Domingo

> 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: code for Kendall trend test
Posted by robinson.inj on Tue, 22 Jan 2008 18:10:31 GMT
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it can help you

```
=========
function mkstrend,x,undef=undef

;It uses the non parametric mann-kendal (mk) statistics to determine
if there
;is (or not) a signifcant trend 95%. The slope is calcu-
;lated by using the Sen's method(s). S is robust and less affected by
;outliers (sen p.k. 1968, ASAJ).
;ex. sl=mkstrend(x,undef=-999.).
;    where x is your ts: x=[0.5, 0.1, 0.2, 0.1, 0.3]
;    no slope then sl=undef. if the ts has one nan: sl=undef


if total(finite(x,/nan)) eq 0 then begin

  x=float(x)
  nx=n_elements(x)
  nx1=nx-1.
  n=nx*(nx-1)/2.  ; The number of elements in d
  d=fltarr(n)
  m=0.

  for i=0,nx1-1 do begin

    for j=i+1,nx-1 do begin

    d(m)=x(j)-x(i)
    m=m+1

    endfor

  endfor

  for i=0L,n-1 do begin

    if d(i) lt 0 then d(i)=-1.
    if d(i) eq 0 then d(i)= 0.
```

```
   if d(i) gt 0 then d(i)= 1.

  endfor

  s=total(d)

  U=x(uniq(x(sort(x))))
  Corr=0       ;Correction for tied observations (equal value)

  for y=0,n_elements(U)-1 do begin

    find=where(x eq U(y))
    uj=n_elements(find)
    Corr=Corr+uj*(uj-1)*(2*uj+5)

  endfor


  Vs=(nx*(nx-1.)*(2*nx+5.)-Corr)/18.   ;For long series it is
necessary to use the whole
                                       ;eq. 2.6 (Corr) (Sen p.k. 1968,
ASAJ)

  if s gt 0. then z=(s-1)/sqrt(Vs)
  if s lt 0. then z=(s+1)/sqrt(Vs)
  if s eq 0. then z=0.

  nor=gauss_cvf(0.025)  ; Prob at 95% (two-side)

  ;The slope

  Sn=fltarr(n)
  m=0.

  for i=0,nx1-1 do begin

    for j=i+1,nx-1 do begin

        Sn(m)=(x(i)-x(j))/(i-j)
        m=m+1

    endfor

  endfor


  Snsorted=Sn(sort(Sn))
  m=float(fix(n/2.))
```

```
  if abs(z) lt nor then begin

    slope=undef

  endif else begin

      if 2*m eq n then slope=0.5*(Snsorted(m)+Snsorted(m+1))
      if 2*m+1. eq n then slope=Snsorted(m+1)

  endelse

endif else begin

   slope=undef

endelse

return, slope

end
```

========
Robinson

On Jan 21, 4:46 pm, txoming...@gmail.com wrote:
> Hi folks,
>
> Does any one have or know a place to find free code in IDL to compute
> the Mann-Kendall trend test and the seasonal Kendall trend test?
>
> Thanks a lot,
>
> Domingo

Subject: Re: code for Kendall trend test
Posted by txomingo99 on Thu, 24 Jan 2008 00:01:39 GMT

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Thank you very much, Robinson. This is really helpful!!!.
Anyway, I've been comparing the results with those from the equivalent
test in S-Plus and they are slightly different. I've two questions. I
didn't manage to know where the p-value is calculated/stored and how
to calculate the Confidence interval.
Thanks again! I'm very grateful.
Domingo.

On Jan 22, 1:10 pm, robinson....@gmail.com wrote:

```
> it can help you
>
> =========
> function mkstrend,x,undef=undef
>
> ;It uses the non parametric mann-kendal (mk) statistics to determine
> if there
> ;is (or not) a signifcant trend 95%. The slope is calcu-
> ;lated by using the Sen's method(s). S is robust and less affected by
> ;outliers (sen p.k. 1968, ASAJ).
> ;ex. sl=mkstrend(x,undef=-999.).
> ;    where x is your ts: x=[0.5, 0.1, 0.2, 0.1, 0.3]
> ;    no slope then sl=undef. if the ts has one nan: sl=undef
>
> if total(finite(x,/nan)) eq 0 then begin
>
>   x=float(x)
>   nx=n_elements(x)
>   nx1=nx-1.
>   n=nx*(nx-1)/2.  ; The number of elements in d
>   d=fltarr(n)
>   m=0.
>
>   for i=0,nx1-1 do begin
>
>     for j=i+1,nx-1 do begin
>
>     d(m)=x(j)-x(i)
>     m=m+1
>
>     endfor
>
>   endfor
>
>   for i=0L,n-1 do begin
>
>     if d(i) lt 0 then d(i)=-1.
>     if d(i) eq 0 then d(i)= 0.
>     if d(i) gt 0 then d(i)= 1.
>
>   endfor
>
>   s=total(d)
>
>   U=x(uniq(x(sort(x))))
>   Corr=0       ;Correction for tied observations (equal value)
```

```
>
>   for y=0,n_elements(U)-1 do begin
>
>     find=where(x eq U(y))
>     uj=n_elements(find)
>     Corr=Corr+uj*(uj-1)*(2*uj+5)
>
>   endfor
>
>   Vs=(nx*(nx-1.)*(2*nx+5.)-Corr)/18.   ;For long series it is
> necessary to use the whole
>                                        ;eq. 2.6 (Corr) (Sen p.k. 1968,
> ASAJ)
>
>   if s gt 0. then z=(s-1)/sqrt(Vs)
>   if s lt 0. then z=(s+1)/sqrt(Vs)
>   if s eq 0. then z=0.
>
>   nor=gauss_cvf(0.025)  ; Prob at 95% (two-side)
>
>   ;The slope
>
>   Sn=fltarr(n)
>   m=0.
>
>   for i=0,nx1-1 do begin
>
>     for j=i+1,nx-1 do begin
>
>         Sn(m)=(x(i)-x(j))/(i-j)
>         m=m+1
>
>     endfor
>
>   endfor
>
>   Snsorted=Sn(sort(Sn))
>   m=float(fix(n/2.))
>
>   if abs(z) lt nor then begin
>
>     slope=undef
>
>   endif else begin
>
>       if 2*m eq n then slope=0.5*(Snsorted(m)+Snsorted(m+1))
>       if 2*m+1. eq n then slope=Snsorted(m+1)
>
```

>   endelse
>
> endif else begin
>
>   slope=undef
>
> endelse
>
> return, slope
>
> end
>
> ========
> Robinson
>
> On Jan 21, 4:46 pm, txoming...@gmail.com wrote:
>
>
>
>> Hi folks,
>
>> Does any one have or know a place to find free code in IDL to compute
>> the Mann-Kendall trend test and the seasonal Kendall trend test?
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>> Thanks a lot,
>
>> Domingo- Hide quoted text -
>
> - Show quoted text -