

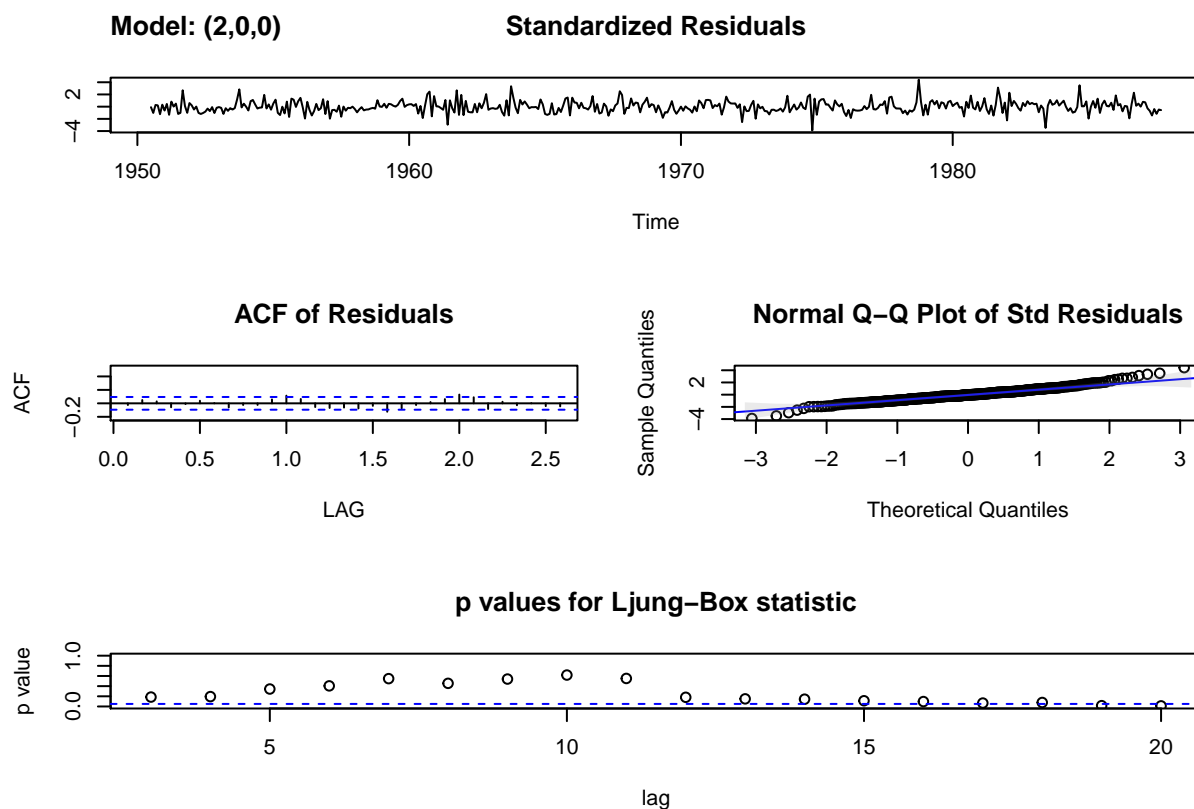
error block test

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```
# replicate the original example
dummy = ifelse(soi<0, 0, 1)
fish = ts.intersect(rec, soil6=stats::lag(soi,-6), dL6=stats::lag(dummy,-6), dframe=TRUE)
summary(fit <- lm(rec ~soil6*dL6, data=fish, na.action=NULL))
attach(fish)
tsplot(resid(fit))
acf2(resid(fit)) # indicates AR(2)
intract = soil6*dL6 # interaction term
```

```
smod <- sarima(rec,2,0,0, xreg = cbind(soil6, dL6, intract))
```

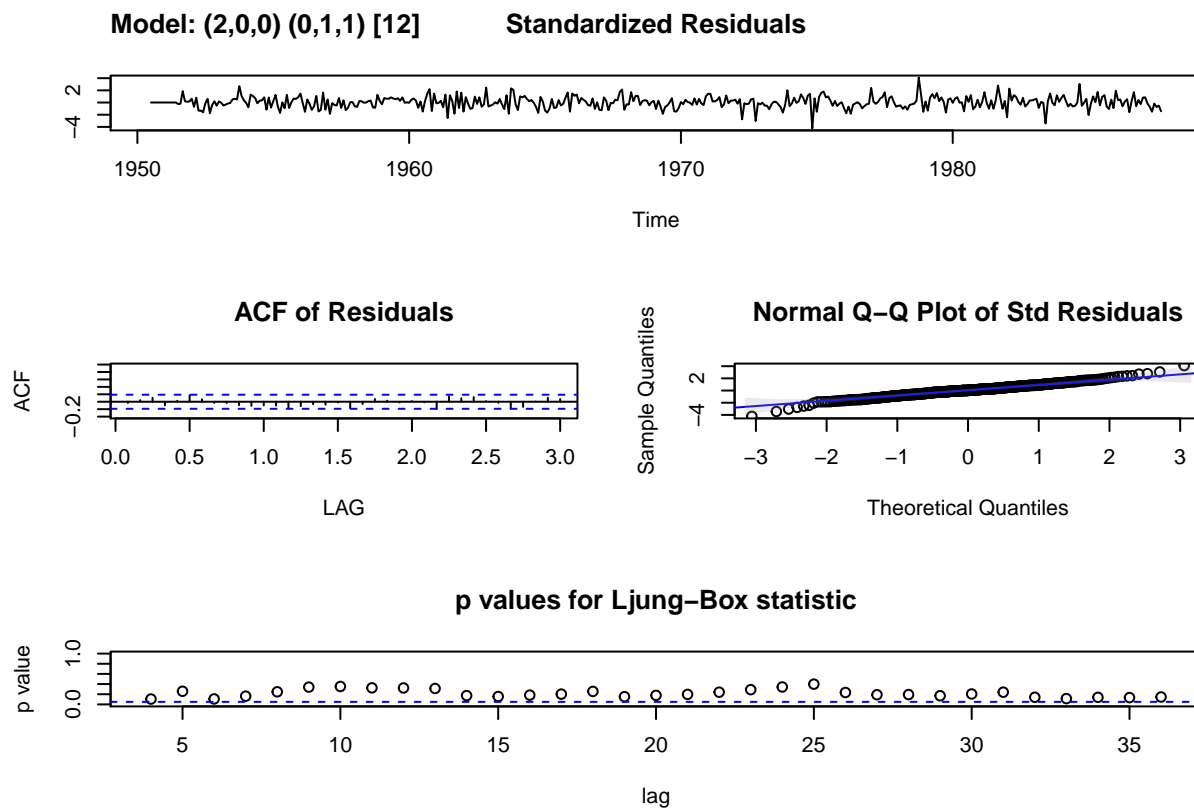


```
smod
```

```
## $fit
##
## Call:
## stats::arima(x = xdata, order = c(p, d, q), seasonal = list(order = c(P, D,
##     Q), period = S), xreg = xreg, optim.control = list(trace = trc, REPORT = 1,
##     reltol = tol))
##
## Coefficients:
##          ar1          ar2 intercept  soil6      dL6    intract
##          1.3624 -0.4703    64.8028  8.6671 -2.5945 -10.3092
```

```
## s.e. 0.0440 0.0444 4.1121 2.2205 0.9535 2.8311
##
## sigma^2 estimated as 86.78: log likelihood = -1633.07, aic = 3280.13
##
## $degrees_of_freedom
## [1] 441
##
## $ttable
##      Estimate      SE  t.value p.value
## ar1      1.3624 0.0440 30.9303 0.0000
## ar2     -0.4703 0.0444 -10.5902 0.0000
## intercept 64.8028 4.1121 15.7590 0.0000
## soiL6      8.6671 2.2205  3.9033 0.0001
## dL6     -2.5945 0.9535 -2.7209 0.0068
## interact -10.3092 2.8311 -3.6415 0.0003
##
## $AIC
## [1] 5.490258
##
## $AICc
## [1] 5.495303
##
## $BIC
## [1] 4.545326
```

```
smod <- sarima(rec,2,0,0, 0, 1, 1, 12, xreg = cbind(soiL6, dL6, interact))
```



```
smod
```

```
## $fit
```

```
##
## Call:
## stats::arima(x = xdata, order = c(p, d, q), seasonal = list(order = c(P, D,
##      Q), period = S), xreg = xreg, optim.control = list(trace = trc, REPORT = 1,
##      reltol = tol))
##
## Coefficients:
##      ar1      ar2      sma1      soiL6      dL6      intract
##      1.2702 -0.3497 -1.0000  8.8775  -2.2932  -8.4351
## s.e.  0.0462   0.0464   0.0444  2.2269   0.9655   2.8655
##
## sigma^2 estimated as 73.46:  log likelihood = -1574.52,  aic = 3163.04
##
## $degrees_of_freedom
## [1] 429
##
## $ttable
##      Estimate      SE  t.value p.value
## ar1      1.2702 0.0462  27.4652  0.0000
## ar2     -0.3497 0.0464  -7.5390  0.0000
## sma1     -1.0000 0.0444 -22.5346  0.0000
## soiL6      8.8775 2.2269   3.9864  0.0001
## dL6     -2.2932 0.9655  -2.3752  0.0180
## intract  -8.4351 2.8655  -2.9437  0.0034
##
## $AIC
## [1] 5.323649
##
## $AICc
## [1] 5.328694
##
## $BIC
## [1] 4.378717
detach(fish)
```